# U.S. NAVY MEDICINE

October 1981

POLICY: *U.S. Navy Medicine* is an official publication of the Navy Medical Department published by the Bureau of Medicine and Surgery. It disseminates to Navy Medical Department personnel official and professional information relative to medicine, dentistry, and the allied health sciences. Opinions expressed are those of the authors and do not necessarily represent the official position of the Department of the Navy, the Bureau of Medicine and Surgery, or any other governmental department or agency. Trade names are used for identification only and do not represent an endorsement by the Department of the Navy or the Bureau of Medicine and Surgery. Although *U.S. Navy Medicine* may cite or extract from directives, official authority for action should be obtained from the cited reference.

DISTRIBUTION: *U.S. Navy Medicine* is distributed to active-duty Medical Department personnel via the Standard Navy Distribution List. The following distribution is authorized: one copy for each Medical, Dental, Medical Service, and Nurse Corps Officer; one copy for each 10 enlisted Medical Department members. Requests to increase or decrease the number of allotted copies should be forwarded to *U.S. Navy Medicine* via the local command.

CORRESPONDENCE: All correspondence should be addressed to: Editor, *U.S. Navy Medicine*, Department of the Navy, Bureau of Medicine and Surgery (MED 00C10), Washington, DC 20372. Telephone: (Area Code 202) 254-4253, 254-4316; Autovon 294-4253, 294-4316. Contributions from the field are welcome and will be published as space permits, subject to editing and possible abridgment.

The issuance of this publication is approved in accordance with Department of the Navy Publications and Printing Regulations (NAVEXOS P-35).

NAVMED P-5088

# U.S. NAVY MEDICINE

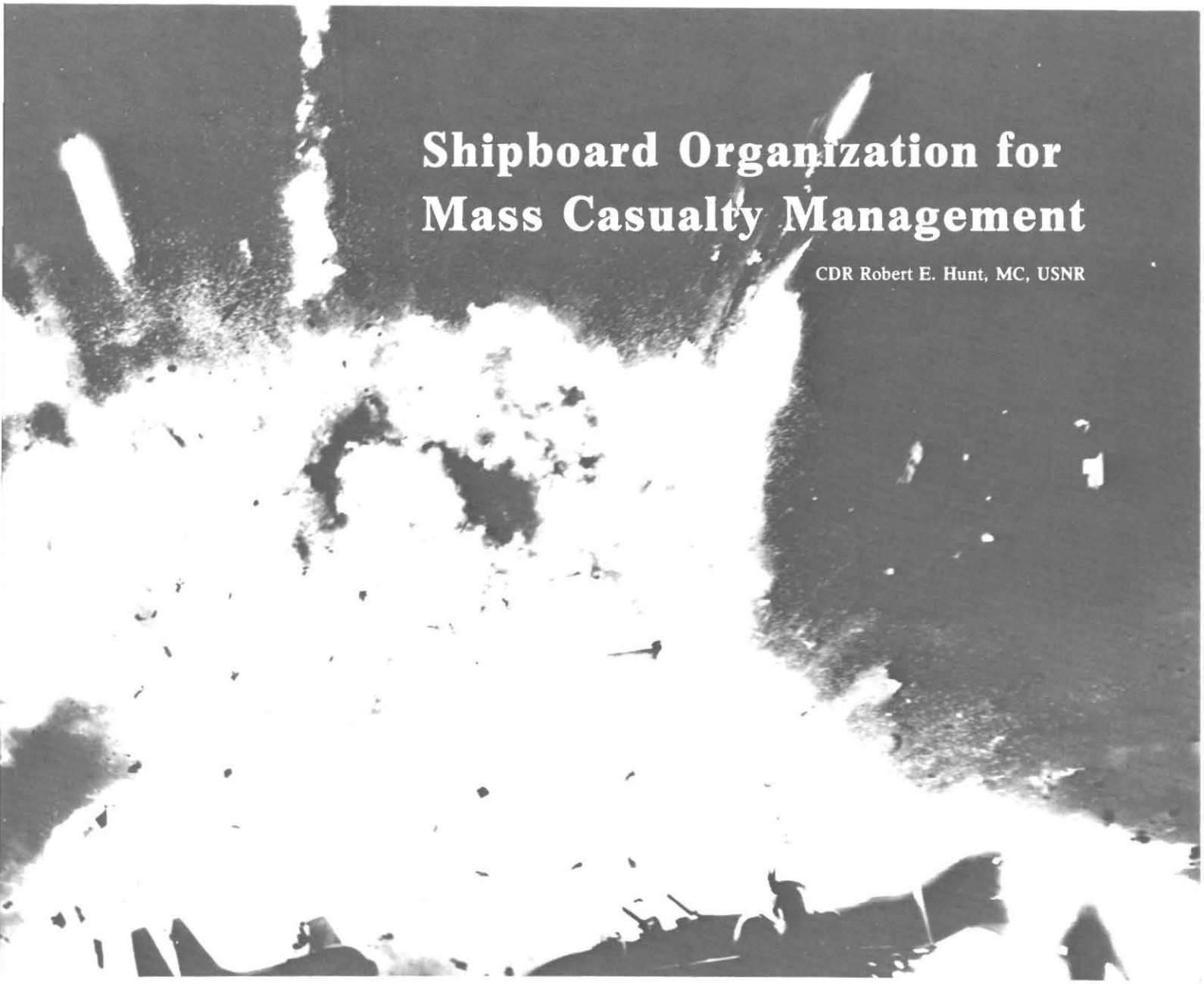
**Vol. 72, No. 10**
**October 1981**



**COVER:** Crewmen of USS *Enterprise* hose down burning fuel and exploding ordnance following a 1969 flight deck mishap off the coast of Hawaii. Management of mass casualties, again in the news since the recent *Nimitz* disaster, is the subject of this month's cover story on page 1. Photo by PH2 L.T. Henderson.

# Shipboard Organization for Mass Casualty Management

CDR Robert E. Hunt, MC, USNR



*Exploding ordnance and aircraft aboard USS* Enterprise *during a 1969 flight deck fire inflicted many casualties.* Photo by PH3 S.A. Osterbauer

For a medical department, the ultimate test at sea is a mass casualty when the ship is threatened. No drill or mental preparation can accurately instill in a crew the sense of terror and potential for confusion when "Fire" or "General Quarters" sounds, casualties are taken, and the very life of the ship is in the balance.

The groundwork for an effective mass casualty capability must carefully be laid. Because of other important problems facing the officers and crew of a ship, mass casualty preparation is often given low priority. Thus, adequate planning is not done, necessary resources are not allocated, and key persons are not trained. The medical department must take the lead in preparing for mass casualty situations and the ship must then work as a team. That effective damage control and mass casualty preparations work was demonstrated by the careful preliminary planning carried out by USS *Kennedy* before the *Belknap* fire in November 1975. The Senior Medical Officer of *Kennedy* felt that frequent drills, dispersed medical supplies, and a flexible plan to deal with the unexpected in just such an emergency contributed to the low number of casualties suffered by *Kennedy*.

When this article was written, Dr. Hunt was Director of the Advanced Hospital Corps School, Naval School of Health Sciences, NRMC Portsmouth, VA 23708.

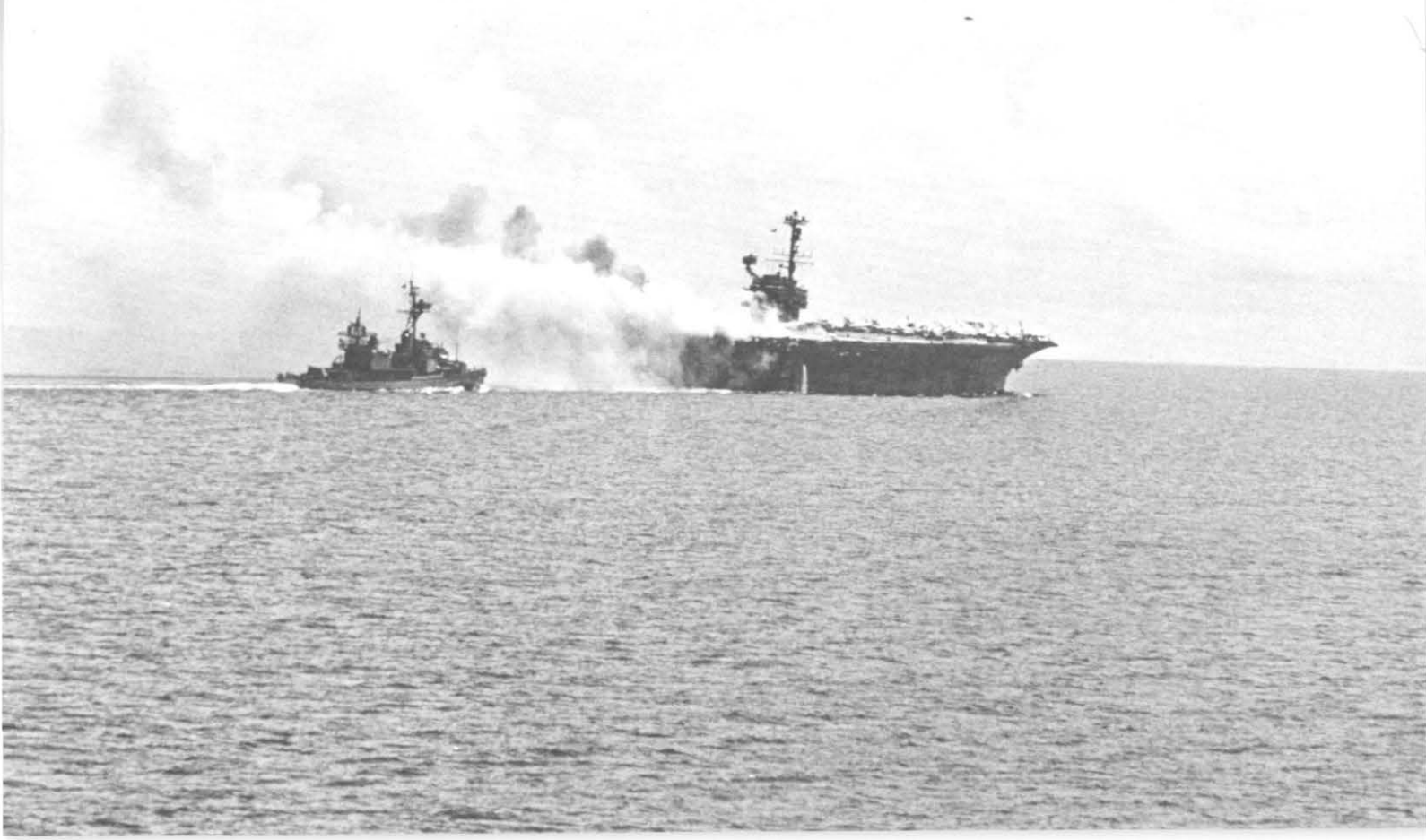
The potential for a shipboard emergency with mass casualties is ever present, especially in light of the increased operational demands, personnel shortages, and the deteriorating international climate facing the Navy today. Familiarization with existing mass casualty and battle doctrine is imperative, but effective implementation requires hard work and original thinking as well as a close working relationship between the medical department and all other departments. Training medical personnel, repair parties, and stretcher bearers is crucial. Without well-designed administrative procedures, effectiveness of casualty care may be significantly degraded with patients lost in the system, medical personnel misallocated, and bottlenecks in casualty flow. Failure to anticipate casualty levels might result in shortfalls of essential supplies while failure to properly disperse medical stores may result in unexpected losses. The best way to assure minimum acceptable levels of medical supplies is to insure that the AMAL (Authorized Medical Allowance List) is current and that all type command (TYCOM) instructions are met. Be certain to determine whether or not your AMAL and TYCOM supply requirements cover all the contingencies for which you should be prepared.

Since World War II there have been repeated instances of mass casualty producing situations occurring on Navy ships. The main lesson from most of these episodes is the devastating suddenness with which a crisis may explode, often when crews are not at general quarters.

**Organization and Administration**

*OPNAVINST 3120.32/640.1.* The General Emergency Bill from the Standard Organization and Regulations of the U.S. Navy provides a

*Smoke billows from USS Forrestal (CV-59) during a tragic fire in the Tonkin Gulf. This 1967 disaster took many lives.* Photo by PHC Neal Crowe



general framework of organization and responsibilities for managing a major shipboard emergency. Among the responsibilities placed on the medical officer or senior medical department representative (SMDR) is a requirement to "supervise the formulation of plans and assignments and the direction of medical department personnel to effect the safe and expeditious treatment of patients."

*Medical Department Battle Doctrine.* These regulations are listed as Ship Instruction 6010.1. It covers specific details of the duties of medical department personnel for any contingency. It outlines a training program for the crew and hospital corpsmen as well as stretcher bearers. Section 2104 of COMNAVSURFLANT 6000.1C, a representative type command instruction, lists all areas of battle doctrine which medical departments must address.

*Ship Watch Quarter and Station Bill.* This bill lists each corpsman's proper duty station, special duty stations, watch station, and general quarters station. Familiarity with these bills will insure an understanding of medical department organization and responsibilities during emergency conditions. Many specific details are not delineated, so the medical officer or SMDR must plan and implement, for example, a comprehensive training program, effective communications with damage control which is responsible for casualty routing during mass casualty situations, contingency plans to deal with unexpected emergencies, and the acquisition of essential medical supplies.

**TABLE 1**

**Damage Control Basic School**
(San Diego, Charleston, Mayport, Norfolk) The three-day course stresses corrective maintenance when there has been material damage to the ship. Useful for corpsmen, medical, and dental officers.

**Repair Party and NBC School**
(San Diego, Norfolk) This is a five-day basic course and a three-day refresher course. Heavy emphasis is placed on NBC defense, especially decontamination procedures and realistic drills.

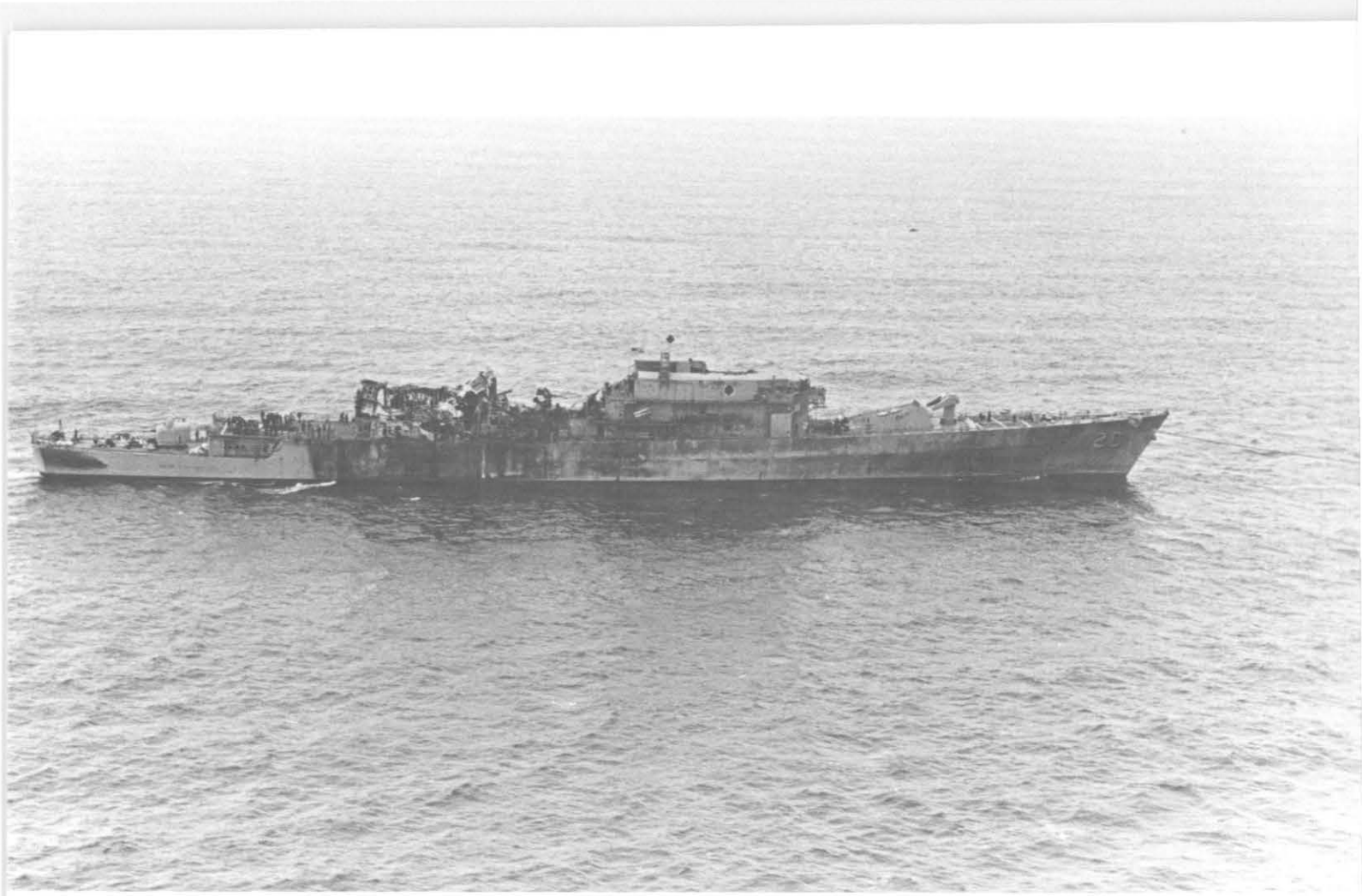
**Damage Control Petty Officer School**
(San Diego, Charleston, Mayport, Norfolk) A two-day school teaching preventive maintenance.

## Training

*Department Training.* All medical department personnel should be familiar with their ship to the extent that they can find their way from one point to another if given the space number and be able to escape from an area by at least two routes in case of fire. As many men as possible should complete fire-fighting school because practice in controlled fires will lessen the potential for confusion and panic in the event of a shipboard emergency. Because of the close relationship which must be cultivated between the medical department and damage control sections, it is vital that each understand the organization and function of the other. There are several schools available that teach various aspects of damage control and are available to medical personnel. The ship's operations officer will be especially helpful in arranging quotas to these schools. Table 1 summarizes the course and locations where they are taught.

Quotas may be arranged at these schools by contacting Quota Control at the appropriate Fleet Training Center. SMDR's should institute an individual training program oriented toward emergency medical care and augment this with refresher training when in port in such places as hospital emergency rooms, dispensaries, and training schools such as Advanced Hospital Corps School. The SMDR with junior corpsmen should schedule regular training, ideally in tandem with his own study program. Ships with a medical officer and a larger department need a cyclical training program with heavy emphasis on trauma, triage, and mass casualty management.

*Ship Training.* All crew members need to be taught basic first aid as set forth in the Standard Basic First Aid Manual, NAVEDTRA 10081. Buddy or self-aid is the first care most wounded will get. This is best accomplished by daily lectures to all ship divisions by the SMDR or training petty officer. Ship drills offer an unparalleled opportunity for providing training to repair parties and stretcher bearers. Even on a ship where the department consists of the SMDR, arrangements should be made to leave the department during the drills to conduct training. Didactic lectures should be short (20-25 minutes) and stress only a few important points. Lectures involving demonstrations or hands-on training may run longer (on the order of one



*The guided missile cruiser USS* Belknap *(CG-26) following her collision with the carrier USS* John F. Kennedy *(CV-67) in 1975.*

hour) without loss of interest. Stretcher bearers in particular, need advanced first aid training since they are responsible for initial casualty evaluation, treatment, and movement during general quarters. A written, long-term plan must be prepared whereby each crewman receives the appropriate training lectures every six months. This plan must be presented to the executive officer's training board for inclusion in the projected overall ship training program. Every new crewman must have the medical portion of his Damage Control PQS Card signed off by a medical department representative within six months of reporting aboard. This provides an excellent opportunity for indoctrination with mass casualty and individual casualty emergency training.

*Drills.* Drills offer a chance to practice what has been learned in the classroom and to identify areas of weakness. Individual casualty drills utilizing moulage sets are useful for assessing the ability of corpsmen and other crewmen to manage various traumatic injuries and for graphically teaching advanced emergency care. Individual casualty drills allow hands-on experience in moving casualties and increased familiarization with equipment. When a mass casualty is simulated, the entire emergency net may be tested more realistically than is possible with single casualties. With the exception of aircraft carriers, shipboard mass casualty drills are infrequently held. It is especially important to critique thoroughly mass casualty drills and learn from the inevitable short-comings. Examples of questions which should be asked include:

- How effective was on-site response in terms of timeliness, triage skills, appropriateness of treatment, and familiarity with stretchers?
- Were casualties routed properly?
- Was there effective communication between the repair parties, damage control central, and medical?
- When casualties reached the designated battle dressing station, were triage and treatment appropriately managed?
- Did medical department and damage control central respond quickly and effectively to unexpected difficulties such as the generation of new casualties, loss of the main treatment facility due to smoke, loss of communications, or casualties among medical personnel?
- If appropriate for the exercise, did the walking blood bank function adequately?

## Triage

Triage is a process by which casualties are sorted on the basis of urgency and type of medical condition and routed according to pre-set protocols for treatment, evaluation, diagnostic procedure, or holding. In a well-staffed military medical system, triage is performed by a highly trained surgeon. The typical Navy ship has a medical department headed by a general medical officer or SMDR and, in fact, initial triage is handled by stretcher bearers who in combat are expected to sort out the dead and the very lightly injured from those to be sent to a battle dressing station for treatment. Criteria for grouping depends on the military situation, casualty load, local medical capabilities, and access to medical evacuation. In a military triage system, the order of priorities for care is:

- Patients who can be returned to duty immediately after minimal treatment.
- Patients for whom immediate treatment will save life or limb.
- Patients who do not require immediate care beyond emergency measures and for whom definitive care may be delayed.
- Expectant care for moribund patients and for those requiring complicated, protracted treatment for survival.

Not every mass casualty situation requires use of the military triage system but those which do include:

- Ongoing or imminent combat, and
- Noncombat situation where the emergency threatens the ship.

In other instances, the most seriously injured are cared for first. The Emergency War Surgery Manual is a good source of information concerning the medical management of shipboard trauma. Military triage is discussed in detail by a film available from several Navy sources: *Practical Triage: A Method of Mass Casualty Handling,* PMB-830-10. The publication, *Disaster Control,* NAVPERS 10899-B, also provides an excellent discussion of triage as well as other aspects of military medicine.

## Physical Plant and Supplies

It is imperative that all emergency gear including stretchers, first aid boxes, medical lockers, and gun bags be stocked in ready-to-use condition. This is a responsibility both time-consuming and frustrating because of the amount of material involved and the frequency with which these supplies are damaged or stolen. The AMAL needs to be reviewed regularly so that dated material can be replaced. Several directives address the dispersal of medical store rooms in battle dressing stations, portable medical lockers and medical store rooms. These include *Manual of the Medical Department,* COMNAVSURFLANT 6000.1C (a representative type command instruction) and *NAVSHIP Technical Manual.* Special care should be taken that items of especially high priority for a mass casualty situation such as IV solutions and setups, bandage, and minor surgery sets are properly dispersed. Should medical spaces be lost, effective plans must be devised for emergency utilization of nonmedical spaces such as hangar decks, ward rooms, and enlisted messing facilities for casualty management. Several sites should be preselected and consideration given to availability of supplies and communication at each site as well as accessibility for stretcher-borne casualties and the adequacy of water and ventilation. Portable medical lockers provide basic supplies for use in these spaces. Those carefully dispersed medical items discussed earlier will augment the medical lockers.

## Consultation

The medical type commander and his staff serve as an outstanding resource for a medical officer or SMDR who is trying to improve his ship's mass casualty posture. All TYCOMs publish a shipboard medical guide which serves as an excellent starting point for evaluating the effectiveness of your plans. When in port, TYCOMs are often able to provide direct consultation or technical assistance visits when requested. Ships with large medical departments such as aircraft carriers and LHAs should be visited and their preparations examined. The more systems you look at the better your plans are likely to be.

## Summary

There is very little literature available to the ship's medical officer or SMDR concerning shipboard mass casualty preparation. This represents a serious deficiency. Too often, medical training focuses on refresher training (REFTRA) or some similar evolution and is otherwise given a low priority. Mass casualty training is all too often ignored both by Fleet Training Groups as well as many ships. More emphasis must be placed on the role of the medical department as an integral part of the ship that can get a significant number of the injured in a mass casualty situation back into action quickly, as well as limiting the morbidity and mortality attendant in such an emergency.

One day, another Navy ship will be fighting for her life. If it is yours, give her and your shipmates the best possible chance for survival.

## References


1. Wenger J: Collision at sea. *US Nav Med* 67(6):10-12, June 1976.
2. Caudill RP Jr: Soviet naval medicine: Emergency medical and surgical care. *US Nav Med* 72(1):7-13, January 1981.
3. Dewey WA: Shipboard medical readiness. *US Nav Med* 61(3):16-19, March 1973.
4. COMNAVSURFLANT 6000.1C, *Shipboard Medical Guide.*
5. OPNAVINST 3120.32/640.1.
6. *Manual of the Medical Department,* chap 2.
7. COMNAVSURFLANT 5400.1A, chap 10.
8. Handbook of Emergency War Surgery.
9. NAVPERS 10899.B, *Disaster Control.*
10. NAVEDTRA 10081.C, *Standard First Aid Manual.* □

# Nimitz Disaster Followup: Contingency Roles of Dental Personnel

*The July issue of* U.S. Navy Medicine *featured the Medical and Dental Departments aboard USS* Nimitz *(CVN-68). In that article, the role of the Dental Department, as an integral part of the medical battle readiness team, was discussed. On the night of 26 May 1981, two weeks after* U.S. Navy Medicine *visited* Nimitz, *a plane crashed on the flight deck killing 14 and injuring 48.*

*The following is excerpted from the* Nimitz *Commanding Officer's report of dental personnel participation in the total Medical Department team effort during the mass casualty evolution experienced that night.*

On 26 May 1981, at approximately 2350, "General Quarters" was sounded. All dental personnel responded and had reached their assigned battle dressing stations (BDS) on time. Individual ambulatory casualties began arriving at the BDS where primary first aid was rendered.

The first casualties to arrive were those of minor burns, lacerations, eye injuries (flash or foreign body), and shock. This first group was closely followed by casualties whose injuries were of a more serious nature, i.e., serious burns, upper extremity fractures (simple and compound), dislocations, smoke inhalation, and fragment wounds. As the number and extent of the casualties became apparent, "Mass Casualties" was sounded and designated personnel departed the BDS for their assigned mass casualty stations. This resulted in the centralization of critical Medical Department personnel in the main BDS and primary triage areas and the resultant manning of BDS by corpsmen and dental technicians only. As more and more medical personnel were called centrally, dental technicians were often left alone to provide the primary first aid care for the injured.

The medical response team from the flight deck BDS, including one dental officer and two dental technicians, proceeded to the scene of the incident and began on-site triage, first aid, and prioritized evacuation to primary triage. Upon arrival at primary triage, casualty care was instituted on a priority basis by all personnel present, depending on their level of training, exposure, etc. Treatment at that time ranged from routine first aid to advanced life support resuscitative procedures. Conditions treated included severe burns and lacerations, shock, abdominal eviscerations, pneumothorax, ruptured spleen, fractured larynx, cervical and possible lumbosacral spinal fractures, and cardiopulmonary arrest.

Treatment modalities ran the gamut of practical first aid care, parenteral fluid therapy, analgesic and general support, intubations, chest tube insertion, and CPR. Following designation of the most critical cases, patients were moved to the main operating room, intensive care, or remained in primary triage for further care and eventual transportation to the ward. All Medical Department personnel then assumed their final disposition stations in operating rooms, the intensive care unit, the ward, a battle dressing station, or triage. Of relevance is the fact that all casualties not initially lost in the incident survived, with eventual disposition to the ward, return to duty, or evacuation to NRMC Jacksonville, FL.

At approximately 0300, identification of the deceased began. Included in the identification team was one dental officer, two dental technicians, and a hospital corpsman. Positive identification was completed by late morning and later reaffirmed at NRMC Portsmouth, VA, by a forensic team from the Armed Forces Institute of Pathology. Of the 13 bodies recovered, nine were identifiable only through dental records due to the severe degree of burning and charring.

Dental technicians rendered virtually all facets of first aid. This included debridement, suturing, dressing of wounds and lacerations, burn treatment, splint fractures, eye irrigations, supportive care of shock cases, assistance in venipuncture and parenteral fluid administration, and vital sign monitoring. They maintained a high and very visible profile throughout the evolution and there were no noted instances of timidity. Lack of familiarization was generally overcome with a "see one, do one" attitude. Their participation was limited only by their level of previous training. A scenario of increased magnitude would have necessitated or, at a minimum, benefited from their enhanced participation in such areas as venipuncture, fluid therapy, and CPR. The same presumption applies to dental officers. Previous exposure to an operating room atmosphere, basic surgical techniques, suturing, field block anesthesia, venipuncture and fluid therapy, narcotic parenteral adminis-

tration, physical examination, and other advanced life support resuscitative procedures, though once learned, are often lost through lack of reexposure and must periodically be reinforced.

Article 6-27, *Manual of the Medical Department,* Change 95, states that, "Dental officers shall be qualified to perform advanced life support resuscitative procedures during surge phases of combat/contingency situations in order that they may treat or assist in the treatment of casualties." BUMEDINST 3040.1D amplifies the requirements and training sites providing combat casualty care for dental officers. Dental enlisted personnel receive training in combat casualty care at "A" School and Field Medical Service School.

The importance of previous combat casualty care training cannot be overemphasized in a situation such as the *Nimitz* disaster. Refresher courses would be invaluable as would advanced cardiac and advanced trauma life support courses. Using shipboard personnel for reinforcement training on an in-service basis could supplement these formal courses.

The dental personnel aboard *Nimitz* were prepared for mass casualty management as part of the total Medical Department team effort. We should all ask ourselves—are we equally as well prepared? □

## Skate Rate

"All you corpsmen ever do is skate! You guys never do any work; I wish I had an easy job like yours!" We hear those comments every day and put up with endless kidding about our "easy" job. I hope to clear up some of the myths about my job and just how easy it is at times. A machinists mate once told me that if you didn't have greasy hands you were in a "skate rate." And we all know that corpsmen never get their hands dirty.

But just how easy is it being a corpsman? Working around pain, suffering, and, many times, death has never been easy for me. I had been a corpsman for two months when a three-year-old boy died in my arms one Christmas eve. He died of Tay-Sachs disease; it's incurable and it only affects very young children. I was about to become a father myself.

A 38-year-old woman who had undergone several operations to arrest cancer lost the battle against that disease on her birthday. She left behind a husband and five children, the youngest of whom was 18 months. Her husband was a Marine master sergeant. I had pictured all Marines as "towers of strength" incapable of showing any emotion. When I saw him in tears that day, I realized that the men of our toughest fighting outfit were also very human, and that I was ignorant in assuming otherwise. I had a lot to learn.

When I was assigned to the Marines, one of my first duties was on an ambulance crew. My first run was to the grenade range where a drill instructor and a recruit were killed by a hand grenade. The scene was the most sickening thing I've seen to this day. There were some very lucky recruits though, because a heroic drill instructor gave his life so that they wouldn't be killed. And then there was the recruit who ended his life with a rifle bullet through his head, the pilot who ejected out of his aircraft when it went sideways and was skipped like a pebble 300 yards down the runway, and the baby who was beaten by his parents because he wouldn't stop crying. He died. I could go on, but I hope I've made my point.

Many people see us when we are not working. To tell the truth, I'd rather not have to work, because when I have to work one of my shipmates is either sick or injured. Even though I have been able to accept it, I have never gotten used to seeing people hurt. If a person thinks my job is "skating," why don't they try it? Grease and blood both wash off, but do you remember the times and circumstances that your hands were dirty? I can recall every time I've had blood on my hands and even though it washes off, it's hard to forget.

I love my job and I am proud of what I do, I put up with ignorant comments every day about my job, but to be called "Doc" means the world to me, especially when a shipmate would rather see his doc than to go to the dispensary.

So if I skate or am out of work, it's your fault. (Keep it that way, please.) But, should you decide to bring your business my way, I am ready and waiting to serve you.

—HM2 Mark J. McClellan, USN, USS *Mobile* (LKA-115)

# Patient Perceptions of a Branch Clinic Ambulance Service

LT C.K. Bird, MSC, USNR

Throughout the United States, the demands for well-trained emergency service personnel are increasing. Emergency service networks are being organized in urban, suburban, and in some of the most remote locations. As the demands for emergency services increase, so do the sophistication and complexity of the communications systems and medical technologies supporting such services. This results in increased training needs for personnel at all levels of the emergency medical system. (*1*) In the civilian community, emergency medical technician training courses are provided to accommodate such needs and to produce personnel who are certified under the state regulations governing the provision of emergency services. Although federal compliance with state emergency medical technician regulations is not mandatory, the Navy has elected to meet or exceed such regulations and has an interest in providing its personnel with the training necessary to do so.

This study was undertaken to assist in designing the training program for hospital corpsmen assigned to Branch Clinics Ambulance Services. A questionnaire was developed to assess the perceived strengths and weaknesses of these services by the

**FIGURE 1. Ambulance Service Appraisal**

May we have your assistance in evaluating the ambulance service? Please complete the questionnaire shown below:

1. **Timeliness**

| Very Prompt | Within Reason | Slow | Unsatisfactory |
|---|---|---|---|
| ☐ | ☐ | ☐ | ☐ |

2. **Appearance of Ambulance Personnel**

| Outstanding | Excellent | Marginal | Unsatisfactory |
|---|---|---|---|
| ☐ | ☐ | ☐ | ☐ |

3. **Courtesy**

| Outstanding | Excellent | Marginal | Unsatisfactory |
|---|---|---|---|
| ☐ | ☐ | ☐ | ☐ |

4. **Medical Professionalism**

| Extremely Capable | Capable | Marginal | Incompetent |
|---|---|---|---|
| ☐ | ☐ | ☐ | ☐ |

5. **Overall Evaluation**

| Outstanding | Good | Fair | Poor |
|---|---|---|---|
| ☐ | ☐ | ☐ | ☐ |

6. **Comments**

_____

_____

_____

_____

_____

For your convenience, please return this questionnaire in the self-addressed envelope. Thank you for your assistance.

LT Bird is Director of Branch Clinics Ambulance Services, NRMC Camp Lejeune, NC 28542.

patient population served. Questionnaires were mailed to a random sample of patients who were recipients of ambulance services within a 90-day period during November and December 1980 and January 1981. The characteristics of service used as variables in the study were Timeliness, Appearance of Ambulance Personnel, Courtesy, Medical Professionalism, and Overall Evaluation. A "Comments" section was also provided for open-ended responses.

It was anticipated that the results of this study would indicate areas that might require particular attention in the proposed training program. For example, a low score for "Courtesy" might indicate the need for several training sessions to address courtesy in the provision of emergency services. If "Timeliness" (or some other characteristic) correlated highly with "Overall Evaluation," it might be inferred that this variable was perceived to be a more important attribute than others in determining the "Overall Evaluation." Comments might provide insight into unanticipated areas of concern.

**The Survey**

A sample of 50 patients per month was determined by statistical formula to be adequate for study purposes. (*2*) The sample was drawn from patient logs recorded in the emergency room treatment logs for the months of the study. A random numbers table was used in the sample selection. The Ambulance Service Appraisal (Figure 1) was designed to force a value judgment in each of the five characteristics of service. A four-point scale classified responses from negative to positive.

Demographic data accumulated on each sample indicated the following: status information (active duty/dependent/retiree/civilian humanitarian), age, sex, rank (if applicable), and branch of service.

A cover letter (Figure 2) was attached to the survey to explain its purpose and solicit cooperation. Included was a self-addressed, franked envelope to facilitate response. The returned surveys were collected and analyzed using the Statistical Analysis System program developed at the Naval Medical Data Services Center, Bethesda, MD.

The overall response rate for the survey was only 34 percent. This could be attributed largely to personnel transfers, nondelivery of survey for a variety of reasons, or lack of interest. Although respondents and nonrespondents did not differ appreciably in ages, females tended to return the questionnaires at a slightly higher rate than males, and personnel of ranks E-4 and above returned questionnaires at a higher rate than those of ranks E-1 to E-3. It is therefore possible that the responses are not truly representative. Nonetheless, some insight into the perceptions of the population were gained.

**Survey Results**

The greatest perceived strength in the ambulance service was its timeliness. Sixty-three percent of the responding samples rated the ambulance service as "Outstanding." The greatest perceived weakness among the variables was "Appearance," although it too was perceived as mainly positive ("good" rather than "outstanding"). This relative weakness might be explained by the Marine Corps grooming standards that most of the sample population has grown

**FIGURE 2**

BRANCH CLINICS
NAVAL REGIONAL MEDICAL CENTER
CAMP LEJEUNE, NC 28542

32-jmn
11240

Dear

Our records indicate that you were recently transported by the Branch Clinics Ambulance Service to the Naval Regional Medical Center Emergency Room for medical care.

We are conducting an on-going evaluation of our efficiency in providing this service to active duty, dependents and retired personnel.

We need your assistance by responding to this questionnaire honestly, and returning it in the enclosed, self-addressed envelope as soon as possible.

Thank You.

C. K. BIRD
Lieutenant
Medical Service Corps
United States Naval Reserve
Director of Branch Clinics
Ambulance Services

*Initial assessment of patient injuries*

**TABLE 1**

| Characteristic | Outstanding | Good | Fair | Poor |
|---|---|---|---|---|
| Timeliness | 63 | 29 | 8 | 0 |
| Appearance of Personnel | 27 | 65 | 8 | 0 |
| Courtesy | 61 | 33 | 6 | 0 |
| Medical Professionalism | 51 | 45 | 4 | 0 |
| Overall Evaluation | 59 | 33 | 8 | 0 |

On a four-point scale "Timeliness" and "Courtesy" had the highest mean scores (3.55) for individual component of service. The "Overall Evaluation" characteristic, however, was also very high with a mean score of 3.51.

**TABLE 2**

| Characteristic | Correlation Coefficient |
|---|---|
| Timeliness | .7047 |
| Appearance of Personnel | .5509 |
| Courtesy | .7426 |
| Medical Professionalism | .6219 |
| Overall Evaluation | .5721 |

This table displays the correlations of the individual characteristics surveyed with the "Overall Evaluation."

to expect; Navy standards seem less rigid by comparison. Table 1 provides the distribution of responses and relative frequency for each characteristic.

Of particular interest was the fact that "Appearance" had the lowest correlation with "Overall Evaluation" indicating that it is perhaps less important than other characteristics in the opinion of the population served. We might have hypothesized that "Appearance" would correlate highly with "Overall Evaluation" based on the mean scores previously discussed. Perhaps the comment under "Appearance" from one questionnaire is a true reflection of many respondents: "Timeliness from Camp Geiger to the hospital was slow, but in an emergency, who cares how you look?" "Timeliness" and "Courtesy" correlated very highly with "Overall Evaluation" as they had received high mean scores in the frequency distribution (Table 1).

Of those who responded to the survey only 10 percent did not comment in the provided space. Many individuals expressed their gratitude for being asked to provide input. The following are representative of the positive as well as negative comments from the questionnaires.

**Timeliness**

- "I've been in the Marine Corps over 30 years and every time they're called, they're on time."
- "Ambulance was slow in arriving; once there, I was treated with great care."

**Appearance**

- "Timeliness from Camp Geiger to the hospital was slow, but in an emergency, who cares how you look?"

**Courtesy**

- "They take time to be nice to you and show that they care."

• "They treated me like a human being."
• "Hospital personnel could be a little more considerate."
• "The ambulance personnel were very helpful in assuring me that everything would be alright."

**Medical Professionalism**

• "They (attendants) asked too many questions."
• "They arrived a few minutes after my call, they tried to revive my husband. They failed, but not for lack of effort and I am most grateful. They tried very hard to save him."

Although the study received a low response rate, the sample was probably representative of the population served. The results indicate that "Appearance of Personnel" should be a topic of discussion. Closer supervision of personnel upon the start of work could improve military appearance.

Continued emphasis on "Courtesy" could include role-playing of common high-stress situations. Resentment brought on by discourteous ambulance and/or emergency room personnel lowers the perceived quality of care. The initial contact between the patient and those providing health care can be highly influential to the rate of patient recuperation.

Surveys can be a useful means in determining perceived strengths and weaknesses. It is vital that we in the Navy Medical Department not only stay current with medical equipment and personnel training but in our dealing compassionately with human beings as well.

*Taking patient's vital signs*

*Complete immobilization of head and neck*

*Correct transfer procedure*

**References**

1. Lucash PD: Volunteer Squad. *Emerg Med Serv* 8(1):78, January/February 1979.
2. $\frac{1}{2}\sqrt{(1-\frac{n}{N}\div\frac{1}{n})}$. □

# Burnout Among Health Care Providers

CDR David K. Emerson, NC, USN

An issue attracting much attention recently in the professional health care literature is a condition known as *burnout.* Health care providers, especially physicians and nurses, are purported to be prime candidates for this syndrome. With the discovery and recognition of this condition, burnout has become a major concern, especially for health care planners who must maintain a readily available pool of personnel to provide consumers with the care they require. Many medical personnel lost from the work force each year due to burnout can pose a serious problem.

Burnout is at once a painful personal experience for the individual involved and a significant problem within the health care profession. Burnout causes attrition in the numbers of competent health care providers available to meet the ever increasing demands for better health care at all levels.

The health care arenas of the 1980s are more than ever, highly stressful environments. When this fact is considered in terms of an inflated economy, there is tremendous pressure on employees to excel in their occupational specialties. An individual who has not established effective methods of coping with the resulting stress can be very vulnerable.

Unlike many other physical and mental maladies, burnout does not only affect the person involved. For example, the burnout victim can be an irritant to his colleagues. He may also negatively affect subordinate staff as well as those under his care. From a broader perspective, burnout degrades overall organizational effectiveness.

Emener quotes others when he defines burnout as, "to fail, wear out, or become exhausted by making excessive demands on energy, strength or resources . . . and burnout involves the loss of concern for the people with whom one is working . . . and results in lowered employee productivity and morale." (*1*) Symptoms attributed to an individual in the throes of burnout include complaints of tiredness, sleep disturbance, gastrointestinal problems, weight loss, quickness to anger, resistence to change, criticism of others, a tendency to blame work or other people for personal problems, a compulsion to work excessively long hours, and emotional and physical exhaustion. The mere presence of these symptoms is not the major concern, ". . . the frequency and magnitude of these symptoms are the crucial elements of burnout." (*1*)

**Burnout is at once a painful personal experience for the individual involved and a significant problem within the health care profession.**

Indications of burnout are very similar to the symptoms present in anyone unable to adapt to stress. The three stages, suggested by Selye in his "General Adaptation Syndrome," are remarkably similar to those cues present in burnout. (*2*)

If the correlation between burnout and an individual's maladaptive response to stress is appropriate, then the countless suggestions for decreasing the negative effects of stress are also appropriate to the burnout victim. Extensive literature pertaining to stress elucidates these suggestions quite effectively.

Effective approaches to this problem must take into account both individual and organizational considerations. Health care providers must know the symptoms of burnout and watch for its manifestations in their subordinates and peers as well as in themselves. The relevancy of one's peer group, those placed in leadership positions of health care, and the victim himself must be considered in dealing effectively with the syndrome.

Those in a burnout victim's peer group who work daily with the individual are more likely to recognize the signs and symptoms than administrative leaders or even the victim himself. They are also in a better position to provide early support. It may be helpful to remember that warm supportive help and perceptive observations are often much more readily accepted and effective when they come from a friend or someone

CDR Emerson is Nursing Coordinator, Psychiatric Service, NRMC San Diego, CA 92134.

"in the same boat." The positive effects of the working peer group are very important. Sometimes the tendency is to report an individual to his or her supervisor, thereby angering the victim, and complicating an already difficult situation.

Those placed in health care leadership positions must learn to deal with this condition. All too often, leaders believe that in counseling a subordinate once, they are then absolved of further responsibility. A real attempt is never made to find a mutually agreeable compromise to a work-related problem. The victim, in turn, may leave the counseling session feeling angry and trapped. A possible approach might be to offer the victim an opportunity to work in a different patient care area or setting. Sometimes a change of shift is most useful. By altering the pressures of the work environment, job satisfaction frequently can be enhanced. Discussion with the victim may provide additional insight into problems and suggest to the leader helpful ways of reaching solutions.

Burnout is universal and not influenced by rank or position. However, there are three personality groups particularly prone to burnout. One is the individual with an overwhelming need to be successful. If the work situation becomes unsatisfactory, the person works harder, perhaps driving himself relentlessly in an effort to improve the situation. Another example is the overcommitted individual who often is esteemed by his employer because he readily accepts added responsibility, new tasks, and new roles. The problem occurs because the individual may well overextend himself in order to impress his employer even more. The third type of personality includes the individual whose need for control is so great that he feels no one else can do the job. This person avoids delegation and adamantly adheres to the "I-can-do-it-better" approach.

**Health care providers must know the symptoms of burnout and watch for its manifestations in their subordinates and peers as well as in themselves.**

For the burnout victim to regain job satisfaction, this situation must be worked through alone or with the assistance of others. This victim has to recognize his personal contribution to his profession, recognize the negative effect burnout is having, and muster the desire to reverse the trend.

What can one do to take charge of the overwhelming stressors which lead to burnout? Meaningful human relationships are extremely important. Many nurses, for example, are single, live alone, work all day, and go home to an empty house and suddenly find that they have no one to share their lives with. Involvement in church organizations, associations, and special interest groups are all possible ways of meeting this basic human need.

Hobbies can be extremely useful in reducing job-created stress. Playing a musical instrument, gardening, sewing, and being involved in or attending sporting events can all provide relief from tension and provide needed recreational activities as well.

Many people find positive results through individual or group exercise programs running the gamut from calisthenics to group-organized marathons. The benefits of such activities are highly significant.

Periodic, planned vacation time is essential. Many burnout victims lose vacation time each year rather than take the time for rest and recovery. Others waste this special time by secluding themselves within their private abodes without external stimulation. This seclusion has advantage when the time is planned for useful work, but this same situation can lead to depression and self-pity. Time off with planned activities is usually found to be refreshing, stimulating, and provides the human body with an opportunity to reestablish its equilibrium.

**Sometimes a change of shift is most useful. By altering the pressures of the work environment, job satisfaction frequently can be enhanced.**

It is important to remember that symptoms of burnout are just that. They need not lead automatically to an exodus from one's chosen profession. The afflicted individual and those concerned colleagues who choose to assist the victim must search for ways to turn the destructive elements of stress into more productive, controlled challenges.

Obviously, to accomplish that task requires real concern on the part of the health care providers not only for their patients but their colleagues as well. Only then will the victims of burnout in the health care profession be helped and again be made productive.

### References

1. Emener WG Jr: Professional burnout: Rehabilitation's hidden handicap. *J Rehabil* pp 55-58, January-March 1979.

2. Selye H: The stress syndrome. *Am J Nurs* 65(3):97-99, March 1965.

3. Patrick PKS: Burnout: Job hazard for health workers. *Hospital* 53(22):17-90, Nov 16, 1979.

4. Scully R: Stress in the nurse. *Am J Nurs* 80(5):912-915, May 1980.

5. Shubin S: Burnout: The professional hazard you face in nursing. *Nursing* 78(7):22-27, July 1978.

6. Storlie FJ: Burnout: The elaboration of a concept. *Am J Nurs* 79(12):2108-2111, December 1979. □

# Terrorist Victim Has Never Given Up

What possible connection could there be between an act of terrorism halfway across the globe and a young, outdoor girl from the Sierra Nevada foothills whose primary interests in school had been 4H projects, raising sheep, and riding horseback?

What unbelievable relationship could exist between a zealous, international neo-Nazi terrorist, allegedly trained in a Palestine Liberation Organization camp, and this petite, fresh-faced American mountain girl serving her country in the U.S. Air Force?

*Even at the beginning of her long stay at NRMC Oakland, AIC Cynthia Fox could laugh at herself as she tried to replace an elastic bandage on the stump of her severed left leg. (3 Nov 1980)*

Further—what lasting impact would the late Gundolf Koehler have on the future of Cynthia Peterson Fox?

I first met her on 3 Nov 1980. She'd been admitted to NRMC Oakland, CA, four days earlier. She lay there in her hospital bed, as fragile and delicate as a Dresden doll, watching a "soap" on the television screen. The only immediately visible clues to her physical problems were a slight dip in the bed covers and a fading scar across her pretty little nose.

In fact, however, AIC Fox, 22, was a severely injured young lady who had been transferred from Travis Air Force Base, CA, to NRMC Oakland for physical therapy, fitting of prosthetic limbs, and neurosurgical evaluation as to whether or not to remove shrapnel still buried in her spinal column.

Cynthia had lost portions of both legs and suffered ear drum damage and numerous shrapnel wounds throughout her body, suddenly and violently on 26 Sept 1980, when a terrorist believed to be Koehler set off a bomb at the crowded entrance to the world-famous annual Oktoberfest in Munich, West Germany.

The young military woman, together with her husband, SSGT John Fox, and four other U.S. Air Force personnel stationed at Hahn Air Base in West Germany, were nearing the entrance to the festival grounds when the bomb, hidden in a trash can, exploded. Five of the American servicemembers in the group were injured. Cynthia, closest to the detonation, was thrown a distance of 50 feet and suffered the most severe injuries. Koehler and 11 others were killed and a total of 216 persons injured.

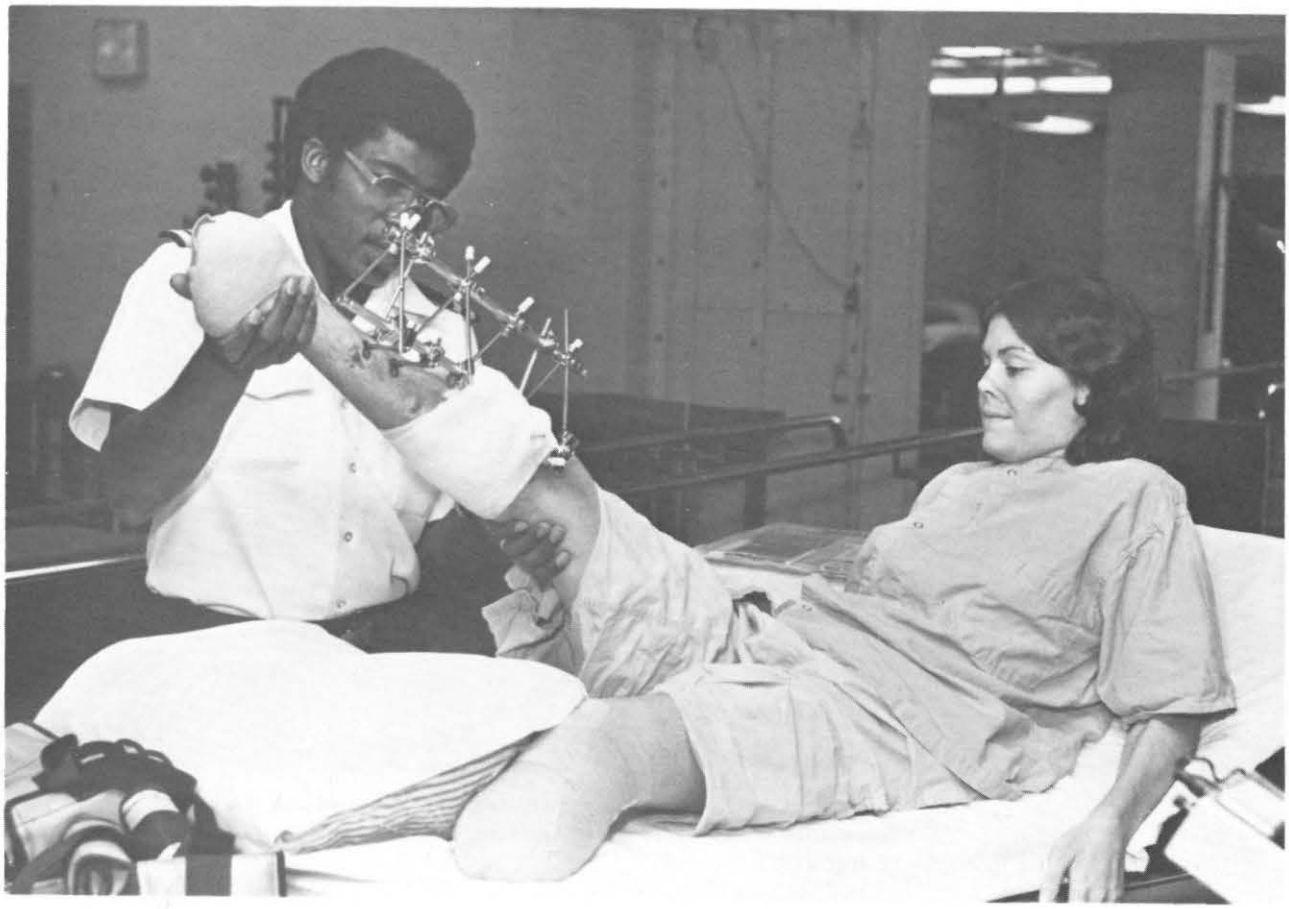
"J.D. (SSGT Fox) remembers seeing a gigantic fireball, several persons thrown off balance and individuals running around in a state of shock, [but] I remember nothing at all," Cynthia says. "I guess I was bleeding profusely, for my husband, who was also injured (broken leg; shrapnel wounds in legs, foot, and wrist; ruptured ear drum), crawled to me and applied a tourniquet to one of my legs. A passing taxi driver, a Frenchman driving a German cab, saw our problem and came to aid, applying a tourniquet to my other leg. I guess I would have bled to death there without his help."

German authorities took her to the university hospital in Munich, where she remained 14 days under the foreign doctors' care before evacuation by helicopter to the large U.S. Air Force medical complex at Weisbaden, West Germany.

After two weeks in Weisbaden, she and her husband were flown to Travis, where he would rapidly recover from his injuries.

Physicians at Travis decided to transfer Cindy to specialists at the Navy hospital in Oakland for further treatment, possible surgery, and for the manufacture and custom-fitting of prosthetic limbs.

Her hospital chart in Oakland contains a notation of ". . . very serious multiple shrapnel wounds, reminiscent of war wounds caused by explosive devices." The medical record also describes in detail the shrapnel which entered posteriorly near the spinal column, the amputation of her left lower extremity to a level of approximately five inches below the knee, and a right partial foot amputation. When she arrived at Oakland, multiple right tibial and fibular fractures were being reduced with an external fixation device, a type of metal cage, which was subsequently removed 15 Dec 1980, and the right lower extremity placed in a plaster cast for about a week.



*Although she doesn't wince, her face shows strain as physical therapist LT Harvey L. Simpkins, MSC, manually raises and lowers the remainder of her right leg. The "metal cage" on her leg is an external fixation device used to hold her many tibial and fibular fractures in place. (4 Nov 1980)*

Prosthetic management, however, actually began on the day that I met her when a plaster wrap was taken of the left below-knee residual limb. On 19 Dec 1980, a wrap of the other leg was taken as a pattern for a prosthesis to support the right fractured tibia and fibula, and also to serve as a device for ambulation. Because of partially open wounds in both right and left residual limbs, ambulation was slow with minimal weight-bearing for the next few weeks while these areas were healing.

Twice a day she was wheeled from her 7 West room to the medical center's well-equipped and staffed Physical Therapy Department on the fourth floor. There, trained therapists who came to know her well supervised exercises to strenghten the muscles in the remainder of her limbs.

Meanwhile, the shrapnel in her spine posed touchy removal. The hospital's top neurosurgeons evaluated the case for possible surgery. After about a month, they noted some improvement in the spine, and since it was causing her no pain, elected to postpone surgery until such time that it gives her problems. Hopefully, never.

The weeks passed in the hospital, with some progress made each day. On 13 Jan 1981, medical center otolaryngologists took a skin graft and surgically replaced the damaged ear drum.

With her hearing improved and her general condition good, she was discharged as an inpatient from NRMC Oakland on 31 March 1981, and arrangements were made with David Grant Air Force Hospital at Travis to transport her three times a week for a month to NRMC Oakland Physical Therapy Department for training in ambulation, and for orthopedic appointments.

On 16 April 1981, because of the inability of the left below-knee residual limb to receive full weight-bearing without opening up the scar on the distal end, Oakland prosthetic technicians decided to construct a new left below-knee prosthesis with knee joints and a thigh lacer as a major weight-bearing ambulatory device. A new right prosthesis was also constructed at that time and was successfully fitted to support the fracture site and assist her in walking. A

*Now an outpatient, Cynthia Fox returns to NRMC Oakland for fitting of a new left below-knee prosthesis by Andre Gilmore, a hospital technician, himself an amputee. (1 May 1981)*

*Unaided, the patient, a little frightened and insecure, grips the handrails tensely as she takes her first step. (1 May 1981)*

*After three or four steps, the walking gets easier and Cynthia shows more confidence. (1 May 1981)*

little less than two weeks later she had her first fitting of the final legs, and on 1 June 1981 took her first walk with a minimal use of crutches.

While recuperating in her home at Travis Air Force Base, Cindy, still on active duty awaiting a medical board decision, also took therapy daily at the hospital there and worked part-time in the Maintenance Control Section of the air base. Additionally, she managed to accomplish most of her housework from a wheelchair and began to settle into a normal routine.

Things were not working out completely the way she had hoped, however. Her marriage was in trouble and she soon realized that she had to face still another amputation—this time the emotionally painful one of divorce.

A year has passed since that fateful day in Munich and almost every day brings a change in Cindy's lifestyle. Now medically retired from the Air Force, she draws a pension and is making a temporary home with her father in Rio Linda, a suburb of Sacramento.

She walks confidently with the aid of crutches and will soon begin driving a car with hand controls. She visits friends and family, attends social events, and recently enjoyed a reunion with former classmates of Oakmont High School in Roseville, CA, near her hometown of Loomis, a small village in California's gold country.

Following graduation from high school, she completed one term at the University of Alberta in Canada, then joined the U.S. Air Force in May 1978. After basic training at Lackland Air Force Base, TX, and technician school at Keesler Air Force Base, MS, she was sent to Germany where she worked as a radio relay equipment specialist. Military service earned her a Unit Commendation Medal and a plaque from her command in Germany recognizing outstanding service.

In the early days following the bombing incident, the Air Force brought several members of her immediate family to Germany to be with her, and American military personnel and their families turned out en masse to give her a warm welcome when she was flown to the Weisbaden hospital.

*On 1 July 1981, Cynthia ascends a flight of stairs without fear.*

*HM1 Chris Whitehead of NRMC Oakland's Physical Therapy staff watches as Cynthia Fox demonstrates how well she can pedal with her artificial limbs. Petty Officer Whitehead has worked with the patient regularly over her long period of rehabilitation. (1 July 1981)*

"Everyone in the Munich hospital was also wonderful to me," she recalls, "and the [West] German Government did so much for me and my family. There is no way that I can explain how great everyone has been. They have really kept me going. That's why I have faith in humanity again."

Navy physicians and therapists who have worked with her over the months all speak of her high spirits and cooperation throughout the long period of treatment and rehabilitation.

"I feel more whole now than before it [the accident] happened," she says. "The main advice I have for other is 'don't ever give up!' That's the main thing. As long as you have your mind, you have everything. There is some reason why I'm still here. I must be something special—I still have a job to do. It certainly will make my day—and my life—if anything good comes to others from my ordeal."

After a little more recuperative time, Cindy has plans to travel, then return to school to study agriculture, biology, and possibly, veterinary science, as she loves both domestic and farm animals.

The principal Navy orthopedist assigned to her care predicts that she will eventually be able to swim, golf, hike, and once again ride her horse. "Her overall recovery is good," he said, "and I see no reason why, in time, she can't pursue full employment and live a normal life."

One day at a time, one step at a time, Cynthia Peterson Fox is nearing that goal.

—Story by Betty Beck, PAO, NRMC Oakland. Photos by HM1 Garry Silk and HM2 David W. Hershenzon. □

# Coping With Blindness

Approximately 15 years ago, I was first told that I had macular degeneration. The diagnosis was made by an experienced ophthalmologist in the small city in which I resided at that time. It was subsequently confirmed by a senior academic ophthalmologist in New York City. When, in 1970, I moved to the National Institutes of Health (NIH) in Bethesda, MD, I learned that my disease was a subject of research in the National Eye Institute, and I therefore availed myself of the services of the several skilled physicians in that institute. Early during my stay in Bethesda, I was seen in consultation by the senior staff of a major academic ophthalmologic institution in the neighborhood. In all, no less than seven distinguished and highly qualified ophthalmologists have considered and reviewed the condition of my retinas.

It is not my intention at this time to discuss the diagnoses that have been made or the treatments that have been provided. Suffice it to say that my loss of vision has been progressive. I stopped driving a car about eight years ago, was pronounced legally blind four years ago, and for the past year or more I have been unable to read. My activities have become severely restricted as my world has shrunk to a sphere with a radius of about an arm's length. Simple chores such as finding the cap of the toothpaste tube when it falls on the floor or carving a piece of chicken at dinner have become formidable, and crossing the road unassisted is a frightening experience.

Through all of these years, and despite many contacts with skilled and experienced professionals, no ophthalmologist has at any time suggested any devices that might be of assistance to me. No ophthalmologist has mentioned any of the many ways in which I could stem the deterioration in the quality of my life. Fortunately, I have discovered a number of means whereby I have helped myself, and the purpose of this essay is to call the attention of the ophthalmological world to some of these devices and, courteously by firmly, to complain of what appears to be the ophthalmologists' attitude: "We are interested in vision but have little interest in blindness."

From a chance acquaintance, a biophysicist whose visual defect was comparable to my own, I first learned of Visualtek (1610 26th St., Santa Monica, CA 90404) and of the Talking Books Program of the Library of Congress. I promptly made contact with both these agencies and gained access to a Visualtek machine—a combination of a small television camera equipped with a Zoomar lens and an inexpensive television monitor. This compact unit permits enormous magnification of printed or written material, and for several years I found it to be a useful accessory in my office. Its presence postponed the time when I would be totally unable to read, regardless of magnification. Although it is costly when compared with simple optical magnifiers (the price is about $1,400 for the basic microviewer and $2,500 for the RS 10 model) this device clearly has many uses, and I hope that ophthalmologists will familiarize themselves with this instrument.

Far more important to me, and of enduring value, is the Talking Books Program. The local community library, approximately five miles away, acts as an agent for the Library of Congress. It provides at no cost a simple tape player and a special record player, both designed to operate at very slow speeds. It also provides a selection from a large variety of books that have been read and recorded onto cassettes or phonograph records. The titles are all cataloged and the catalog is readily available. Once enrolled, I started to receive bimonthly supplemental catalogs showing new additions to the list of available readings. Incidentally, the reading that I have heard is of a highly professional quality, with excellent diction, interesting intonation, and often a dramatic flavor. I go through many Talking Books each month, taking advantage of one of the charming features of the program: the cassettes or records are mailed to and from the distributing point at no postal charge. The program operates at no cost to the beneficiary.

In addition to procuring books on tapes from the Library of Congress program, I also subscribe to several journals through Recorded Periodicals (919 Walnut St., 8th Floor, Philadelphia, PA 19107). The journals arrive regularly and permit me to keep abreast of at least some of the major developments in my fields of interest. *Newsweek* magazine, on disposable phonograph records, arrives with reasonable promptness each week from P.O. Box 6435, 1839 Frankfort Ave., Louisville, KY 40206. A portable cassette tape recorder, specially built for the blind by the General Electric Company, can be purchased through the American Printing House for the Blind, Inc. (General Office, P.O. Box 6085, Louisville, KY 40206), and a wide

Reprinted by permission of the *New England Journal of Medicine*, Vol 305, No. 8, pp 458-460, August 20, 1981.

variety of aids and materials for the visually impaired can be ordered by mail from the catalog of SFB Products, Box 385, Wayne, PA 19087.

Another program, which may or may not be peculiar to the area in which I reside, is the Washington Ear. This organization distributes, at no cost, small radio receivers pretuned to a single station. Every morning, starting at 7:00 a.m., volunteers at that station read essentially the entire text of the daily newspaper. They repeat this reading later in the day, and between these times they read other current material that may be of interest to the audience. Partly because my wife reads selected topics from the newspaper to me at breakfast each morning and partly because the proper use of the Washington Ear requires large blocks of time, which are not usually available to me, I have found this accessory generally less useful. It is, however, a service that is freely available in the Washington, DC, area and possibly in other parts of the country.

It may not be generally recognized by the sighted that as one loses vision one becomes disoriented not merely in space but also in time. When I found that I could no longer read the time from a conventional wristwatch or from a digital watch, I mentioned this to my ophthalmologist, who indicated that he thought there must be devices that could substitute for traditional timepieces. However, learning nothing further from him, I raised the matter with the gentle lady in the Talking Books section of the library in Rockville, MD, and she at once knew the answer. She told me that a store no more than a mile from the NIH (Volunteers for the Visually Handicapped, 4405 East-West Hwy., Bethesda, MD 20814) was devoted exclusively to devices to assist the visually handicapped. I visited this store and found available a variety of Braille timepieces that could be read by touch. I acquired such a wristwatch but found that whereas I could easily read the minute hand, I had more difficulty with the hour hand, which often seemed to be concealed behind the minute hand. I used this device until I learned, quite by chance from a salesman, of the existence of a Talking Clock manufactured by Sharpe Corporation. This I was able to purchase locally and since then I have never been far from my cherished timepiece. Now at any time, day or night, I merely have to push a button to hear the synthetic voice say, for example, "It is 5:45 p.m." The Talking Clock also has a charming alarm (it plays the Boccherini Minuet to wake you) and an interval timer that permits the blind person to boil a three-minute egg. The price when I purchased one last January was about $75.

From my son, who was taking graduate courses at the Massachusetts Institute of Technology, I first learned of the Kurzweil reading machine (33 Cambridge Pky., Cambridge, MA 02142), and I arranged to attend a demonstration of this fantastic instrument in the Washington area. Whereas the price is high (about $29,000), I was happy to learn that the NIH was willing to procure such an instrument, which is now in my office. The Kurzweil machine scans the printed or typewritten page and recognizes each letter. Having in its memory a list of rules for English pronunciation, it synthesizes each combination of letters into sounds approximating speech. Given a good typeface, the machine produces a spoken language that could be described as a dialect of English. However, I have found that as with other dialects, the more one listens, the more one understands. There are a variety of hazards that the Kurzweil reading machine has not yet overcome. If in the course of the text there is a table of data, a graph, or a photograph, the machine endeavors to find recognizable letters and words, and its output is likely to be gibberish. If the text contains Roman type or a word in italics, this also seems to confuse the machine and render its output incomprehensible. Although the machine is supposed to be able to handle a multicolumnar format on the printed page, in my experience it does not handle this very well. One soon gets used to its systematic mispronunciations of certain words, and one can often unscramble an incomprehensible word by instructing the machine to spell it out. This the machine does with great clarity.

These, then, are some of the aids with which I have surrounded myself as my vision has progressively deteriorated. I have been struck by the fact that in not one single instance was the device called to my attention by one of the several ophthalmologists whom I consulted. In each case, my contact was initiated and developed through nonophthalmologic channels. Currently I am in contact, through a chemist friend, with a camera company that recently deviced a sonar focusing device. Correspondence has revealed that this company has already explored the possibility of using its sonar device to assist blind persons in their ambulatory navigation. Indeed, such an instrument, the electronic equivalent of the seeing-eye dog, has been built, although it is apparently not com-

mercially available as yet. I am hoping to have such an instrument assembled on the basis of the inventor's plans, in order to ascertain its usefulness to one who otherwise walks into trees and trips over garbage pails. Whereas my electronically-minded friends appear to be interested in such a device, I could elicit little enthusiasm among my ophthalmologist friends.

Quite recently I was visited by a laboratory research assistant at NIH, who was referred to me by the scientific director of her institute. This woman is suffering from progressive retinitis pigmentosa and is under the care of an able ophthalmologist. She now has very restricted vision and reads slowly and with difficulty. She told me that no one had ever breathed a word to her about the Talking Books Program, large-print books and journals, a large-print edition of the *New York Times,* or any of the other devices described above. Fortunately I was able to provide her with names, addresses, and telephone numbers and to give her encouragement, which she sorely needed. I reminded her that decreasing visual acuity need not mean total dissociation from the real world; her ophthalmological consultant had apparently failed to do so. This is but the latest of a number of similar conversations that I have had with visually handicapped persons. It is in response to these experiences that I finally decided to write this essay.

I do not mean to imply that there is anything peculiar about the behavior pattern of ophthalmologists. Internists concern themselves with living patients and in my experience have relatively little interest in the cadaver. The autopsy represents a failure of medical science and medical art. Blindness, similarly, represents a failure of ophthalmology. No one likes failure. I am nevertheless troubled by the lack of regard, which is apparently quite general in the profession of ophthalmology, for the quality of life of the person whose vision is seriously impaired. I urge that this should be a concern of the ophthalmologist, who is necessarily in contact with the victims of progressive visual impairment. Typically, the ophthalmologist confronted with a patient suffering from a disease of the eye performs the diagnostic and therapeutic manipulations, provides the patient with refractive correction, and prescribes eye drops or other medication. If after all this the patient still has a serious visual impairment, the ophthalmologist is missing an extraordinary opportunity if he or she fails to direct the patient's attention to one or more of the aids and agencies designed to improve the quality of life of the visually handicapped person. If ophthalmologists will take the small amount of time necessary for this purpose, they will surely be rewarded by the enhanced gratitude and affection of their patients. The many suggestions that can be made may transform the life of the blind from a living hell to a moderate inferno or, perhaps occasionally, a heaven. The ophthalmologist who succeeds in achieving such a transition will be fulfilling one of the highest goals of the profession.

—DeWitt Stetten, Jr., M.D., Ph.D., National Institutes of Health, Bethesda, MD 20205 □

## Surgical Research Billets

The Naval Medical Research Institute (NMRI), Bethesda, MD, is looking for surgeons to fill full-time research billets in the Surgical Research Branch of the Casualty Care Research Program Center.

The Surgical Research Branch has been in existence since 1942, and has made major contributions to cardiopulmonary bypass technology, septic shock, and hemorrhagic shock. Current areas of research include: evaluation of treatment modalities in primate septic shock, pathophysiology and treatment of the adult respiratory distress syndrome, and development of a primate hypothermia model. Future projects may relate to the combined effects of radiation and trauma.

Surgeons with research experience are encouraged to apply for these billets. Additional information and arrangements to visit NMRI may be obtained through LCDR Larry Casey, MC, USNR. Telephone: Commercial: (202) 295-0063, Autovon: 295-0063.

CUT ALONG THIS LINE

| | |
|---|---|
| HEADQUARTERS, US MARINE CORPS | THE MO RADM J.A. ZIMBLE, MC, USN<br>DO CAPT N.K. LUTHER, DC, USN<br>EA CDR G. HARRIS, MSC, USN |
| HEADQUARTERS, FMF ATLANTIC | FORSURG CAPT C.H. MCALLISTER, MC, USN<br>FOR DO CAPT R.S. DAVISON, DC, USN<br>AO CDR W.C. LUDWIG, MSC, USN |
| SECOND MARINE DIVISION | DIVSURG CAPT M.O. ABBOTT, MC, USN<br>AO LCDR W.T. MCCOY, MSC, USN |
| SECOND FORCE SERVICE SUPPORT GROUP | GRSURG CAPT R.D. CHANEY, MC, USN<br>AO LCDR J.A. KUBAL, MSC, USN<br>CO DENCO SECOND DENBN CAPT R.P. FALCONE, DC, USN<br>CO 22ND DENCO SECOND DENBN CAPT E.J. TRUSZ, DC, USN<br>CO 12TH DENCO SECOND DENBN CAPT J.A. FADY, DC, USN |
| SECOND MARINE AIRCRAFT WING | WINGSURG CAPT C.H. BERCIER, MC, USN<br>AO LCDR J.W. DENAYER, MSC, USN |
| HEADQUARTERS, FMF PACIFIC | FORSURG CAPT R.W. JONES, MC, USN<br>FORDO CAPT P.C. ALEXANDER, DC, USN<br>AO CAPT C.A. ROPER, MSC, USN |
| FIRST MARINE DIVISION | DIVSURG CAPT R.W. BROWNING, MC, USN<br>AO LCDR J.T. LEWIS, MSC, USN |
| FIRST FORCE SERVICE SUPPORT GROUP | GRSURG VACANT<br>CO FIRST DENBN CAPT B.C. SHARP, DC, USN<br>CO FIRST DENCO CAPT W.H. PRANGE, DC, USN<br>CO 13TH DENCO FIRST DENBN CAPT R.E. WILLIAMS, JR., DC, USN |
| THIRD MARINE AIRCRAFT WING | WINGSURG CAPT C.H. SPENCE, MC, USN<br>AO LCDR H.E. HOLCOMB, MSC, USN |
| FIRST MARINE BRIGADE | BGDSURG CAPT F. KAVANAUGH, MC, USN<br>CO 21ST DENCO CAPT R.C. TERHUNE, DC, USN<br>AO LT J.O. TAYLOR, MSC, USN |
| THIRD MARINE DIVISION | DIVSURG CAPT J.M. HEASTER, MC, USN<br>AO LCDR J.L. RAYMOND, MSC, USN |
| THIRD FORCE SERVICE SUPPORT GROUP | GRSURG CDR L. SHIVERTAKER, MC, USN<br>AO LT P.L. GODBEY, MSC, USN<br>CO THIRD DENCO THIRD DENBN CAPT M. BRENYO, DC, USN |
| THIRD FORCE SERVICE SUPPORT GROUP (DET A) | CO 11TH DENCO THIRD DENBN CAPT K.V. FORTMAN, DC, USN<br>CO THIRD DENBR CAPT M.C. CLEGG, DC, USN |
| FIRST MARINE AIRCRAFT WING | WINGSURG CAPT J.F. CLYMER, MC, USN<br>AO LCDR A.A. MINCER, MSC, USN |
| FLDMEDSERSCOL, CAMP PENDLETON, CA | CO CAPT R.C. HODGES, MSC, USN<br>XO CDR E.J. LOOS, MSC, USN |
| FLDMEDSERSCOL, CAMP LEJEUNE, NC | CO CAPT W.E. MCCONVILLE, MSC, USN<br>XO LCDR M.D. ICZKOWSKI, MSC, USN |

—Roster prepared by MED 21, BUMED



FOLD

# ROSTER—1 NOVEMBER 1981

*Following is a list of staff medical and dental officers of major fleets and forces, commanding officers, executive officers, officers in charge, administrative officers, directors of administrative services, directors of clinical services, directors of nursing services, chief nurses of Medical Department activities, division surgeons and dental officers of Marine divisions, Marine aircraft wings, and Marine brigades.*

| | |
|---|---|
| CINCPACFLT/CINCPAC (ADDU) | RADM S.H. SEATON, MC, USN |
| CINCPACFLT | CAPT N.D. WILKIE, DC, USN (ADDU)<br>AO CDR L. BIESIADNY, MSC, USN |
| CINCLANTFLT/CINCLANT (ADDU) | RADM W.M. MCDERMOTT, JR., MC, USN |
| CINCLANT/CINCLANTFLT/CINCWESTLANT<br>CINCLANTFLT<br>SACLANT | RADM J.B. HOLMES, DC, USN<br>AO CDR B. OZMENT, MSC, USN<br>AO CDR P. REED, MSC, USN |
| CINCUSNAVEUR | CAPT A.P. BELMONT, MC, USN (ADDU)<br>CAPT R.P. MORSE, DC, USN (ADDU) |
| COMNAVFORJAPAN | CAPT J.E. CARR, MC, USN (ADDU)<br>CAPT G.L. HART, DC, USN (ADDU) |
| COMNAVLOGPAC | RADM S.H. SEATON, MC, USN (ADDU)<br>AO LCDR R. LOCKHART, MSC, USN |
| COMNAVAIRLANT | CAPT D.J. LETOURNEAU, MC, USN<br>AO LCDR R.P. BERUBE, MSC, USN |
| COMNAVAIRPAC | CAPT F.E. DULLY, MC, USN<br>CAPT A.L. DAVY, DC, USN (ADDU)<br>AO LCDR C.R. CALDWELL, MSC, USN |
| COMSUBLANT | CAPT G. ZEL, MC, USN |
| COMSUBPAC | CAPT C.A. HARVEY, MC, USN<br>CAPT N.D. WILKIE, DC, USN (ADDU) |
| CNTECHTRA (NAS MEMPHIS, TN) | CAPT O.B. EMERINE, MC, USN (ADDU) |
| CNATRA (NAS CORPUS CHRISTI, TX) | CAPT R.R. PALUMBO, MC, USN (ADDU) |
| COMNAVSURFLANT | CAPT W.M. PHILLIPS, MC, USN<br>CAPT R.E. OLDFIELD, DC, USN (ADDU) |
| COMNAVSURFPAC | CAPT D.C. GOOD, MC, USN<br>CAPT R.E. HOWE, DC, USN (ADDU)<br>AO LCDR R.S. BOLSHAZY, MSC, USN |
| COMNAVFORCARIB/COMANTDEFCOM | CAPT P.F. WELLS II, MC, USN (ADDU)<br>CAPT M.S. DAVIS, DC, USN (ADDU) |
| COMFAIRMED | CAPT W.J. SCOTT, DC, USN (ADDU) |
| COMTRAWING 4 | CAPT A.D. SORENSON, DC, USN (ADDU) |
| COMNAVMARIANAS | CAPT R.L. SKYBERG, DC, USN (ADDU) |

NAVDISVECTECOLCONCEN, ALAMEDA, CA . OIC LCDR L.A. LEWIS, MSC, USN
AO LCDR D.R. GRAY, MSC, USN

NAVREGMEDCLINIC, ANNAPOLIS, MD ... CO CDR P.W. JOHNSON, MSC, USN
SR NURSE CDR P. MCDONALD, NC, USN

NAVHOSP, BEAUFORT, SC ..... CO CAPT H.E. SHUTE, MC, USN
DAS CDR E. BOBOLA, MSC, USN
DNS CAPT E. SULLIVAN, NC, USN

NATNAVMEDCEN, BETHESDA, MD ..... CO RADM Q.E. CREWS, MC, USN
DCS CAPT R.H. BODENBENDER, MC, USN
DAS CAPT R. ZENTMYER, MSC, USN
DNS CAPT P. ELSASS, NC, USN

NATNAVDENCEN, BETHESDA, MD ..... CO CAPT H.C. PEBLEY, DC, USN
DCS CAPT J.C. KELLEY, JR., DC, USN
DAS LCDR G. HARRINGTON, MSC, USN

HSETC, BETHESDA, MD ..... CO RADM F. SHEA, NC, USN
XO CAPT C. MOCK, MC, USN

NSHS, BETHESDA, MD ..... CO CAPT E.R. CHRISTIAN, MSC, USN
XO CDR S.T. FISHER, MSC, USN

NAVMEDRSCHINSTITUTE, BETHESDA, MD . CO CAPT J. VOROSMARTI, JR., MC, USN
AO CDR G. CARPENTER, MSC, USN

NAVMEDRSCHDEVCOM, BETHESDA, MD .. CO CAPT J.F. KELLY, DC, USN

AFRADBIORSCHINST, BETHESDA, MD ... DIR CAPT P.E. TYLER, MC, USN
AO CDR R.S. CUNNINGHAM, MSC, USN

NAVMEDATASERVCEN, BETHESDA, MD .. CO CAPT L.E. ANGELO, MSC, USN
XO LT M.D. RODMAN, MSC, USN

NAVREGMEDCEN, BREMERTON, WA .... CO CAPT R.A. PROULX, MC, USN
DCS CAPT D.W. PETERSON, MC, USN
DAS CDR W. SHERWOOD, MSC, USN
DNS CAPT L. PETERSON, NC, USN

NAVREGDENCEN, BREMERTON, WA .... CO CAPT R.E. MOORE, DC, USN
DCS CAPT J.V. GOURLEY, DC, USN
DAS VACANT

US NAVMEDRSCHU #3, CAIRO, EGYPT ... CO CAPT R.H. WATTEN, MC, USN
DO LT S.A. LEONE, DC, USN
AO LCDR H. PETERSEN, MSC, USN
SR NURSE LCDR C. CARNEY, NC, USN

NAVREGMEDCEN, CAMP LEJEUNE, NC .. CO CAPT J.N. RIZZI, MC, USN
DCS CAPT H.A. STEIMEL, MC, USN
DAS CDR H.B. PRICE, MSC, USN
DNS CAPT E. ONEILL, NC, USN

NAVREGDENCEN, CAMP LEJEUNE, NC ... CO CAPT E.J. HEINKEL, JR., DC, USN
DCS CAPT E.J. COLLEVECCHIO, DC USN
DAS LCDR R.J. LINDSAY, MSC, USN



US NAVHOSP, ROTA, SP ..... CO CAPT M. NIEVES, MC, USN
DCS VACANT
DAS LCDR R. HOPKINS, MSC, USN
DNS CAPT B. WEIDT, NC, USN

NAVREGMEDCEN, SAN DIEGO, CA .... CO RADM E.P. RUCCI, MC, USN
DCS CAPT C.C. ATKINS, MC, USN
DAS CAPT F.M. RICHARDSON, MSC, USN
DNS CAPT P. BUTLER, NC, USN

NAVREGDENCEN, SAN DIEGO, CA ..... CO RADM T.W. MCKEAN, DC, USN
DCS CAPT D.T. FENNER, JR., DC, USN
DAS CDR J. GALBREATH, MSC, USN

NAVHLTHRSCHCEN, SAN DIEGO, CA ... CO CAPT J.E. LANG, MC, USN

NSHS, SAN DIEGO, CA ..... CO CAPT T. SUMMEROUR, MSC, USN
SR NURSE CDR B. GREEN, NC, USN

NAVENPVNTMEDU #5, SAN DIEGO, CA .. OIC CAPT T.R. BYRD, MC, USN
AO CDR E.R. WOOLL, MSC, USN

NAVREGDENCEN, SAN FRANCISCO, CA . CO CAPT M.P. WIRTHLIN, JR., DC, USN
DCS CAPT B.M. MASON, DC, USN
DAS CDR D.L. VOSLOH, MSC, USN

NAVREGMEDCLINIC, SEATTLE, WA ... CO CDR R.A.A. JEFFS, MSC, USN
SR NURSE LT T. WHITE, NC, USN

US NAVREGMEDCEN, SUBIC BAY, RP .. CO CAPT P.D. COOPER, MC, USN
DAS LCDR R. BRUBAKER, MSC, USN
DNS CDR A. NEWQUIST, NC, USN

US NAVREGDENCEN, SUBIC BAY, RP ... CO CAPT J.P. WILLIAMS, DC, USN
DCS CAPT D.E. FITZGERALD, DC, USN
DAS LCDR E. WARD, MSC, USN

NAVAL DISTRICT, WASHINGTON, DC ... DMO RADM Q.E. CREWS, MC, USN (ADDU)
DDO CAPT H.C. PEBLEY, DC, USN (ADDU)

AFIP, WASHINGTON, DC ..... DEP DIR CAPT R. KARNEI, MC, USN

NAVHOSP, WHIDBEY ISLAND, WA .... CO CAPT G.W. BALDAUF, MSC, USN
SR NURSE CAPT K. KENDALL, NC, USN

US NAVREGDENCEN, YOKOSUKA, JA .. CO CAPT J.E. CARR, MC, USN
DCS CAPT F.T. OLIVER, MC, USN
DAS CDR R. GUTSHALL, MSC, USN
DNS CAPT P. MORIS, NC, USN

US NAVREGDENCEN, YOKOSUKA, JA .. CO CAPT G.L. HART, DC, USN
DCS CAPT M. SMITH, DC, USN
DAS LCDR M.N. LEWIS, MSC, USN

NAVOPHTHALSUPPTRACT,
YORKTOWN, VA, ..... CO CDR R.L. GOOCH, MSC, USN

CUT ALONG THIS LINE

| | |
|---|---|
| NAVREGDENCEN, PEARL HARBOR, HI ... | CO CAPT N.D. WILKIE, DC, USN<br>DCS CAPT J.T. STEVENS, DC, USN<br>DAS LCDR G. MCCRACKEN, MSC, USN |
| NAVMEDADMINU, TRIPLER AMC, PEARL HARBOR ..... | OIC LCDR D.D. WILSON, MSC, USN |
| NAVENPVNTMEDU #6, PEARL HARBOR .. | OIC CDR R.R. HOOPER, MC, USN<br>AO LT K.L. JEAN, MSC, USN |
| NAVAEROSPREGMEDCEN, PENSACOLA, FL . | CO RADM R.F. MILNES, MC, USN<br>DCS CAPT J.A. RUSSOTTO, MC, USN<br>DAS CDR A.D. HATTEN, MSC, USN<br>DNS CAPT B. SLATER, NC, USN |
| NAVREGDENCEN, PENSACOLA, FL ..... | CO CAPT W.D. BUTLER, DC, USN<br>DCS CAPT K.E. BROWN, DC, USN<br>DAS LCDR P.R. COWART, MSC, USN |
| NAVAEROSPMEDINST, PENSACOLA, FL .. | CO CAPT R.P. CAUDILL, MC, USN<br>XO CDR D.E. FURRY, MSC, USN |
| NAVREGMEDCEN, PHILADELPHIA, PA ... | CO CAPT R.E. TOBEY, MC, USN<br>DCS CAPT J.W. THRASHER, MC, USN<br>DAS CAPT K.L. DARR, MSC, USN<br>DNS CAPT C. SHEA, NC, USN |
| NAVREGDENCEN, PHILADELPHIA, PA ... | CO CAPT D.G. GARVER, DC, USN<br>DCS CAPT L.S. VAZZANA, DC, USN<br>DAS LCDR R. SKOG, MSC, USN |
| NATMEDNATSUPPCOM, PHILADELPHIA, PA ..... | CO CAPT H.S. RUDOLPH, MSC, USN |
| NAVREGMEDCLINIC, PORT HUENEME, CA . | CO CAPT F.A. TEAGUE, MSC, USN<br>SR NURSE CAPT E. PETERS, NC, USN |
| NAVREGMEDCLINIC, PORTSMOUTH, NH .. | CO CAPT J.J. PALMER, MSC, USN<br>XO LCDR R. RELINSKI, MSC, USN<br>SR NURSE CDR A. SULLIVAN, NC, USN |
| NAVREGMEDCEN, PORTSMOUTH, VA ... | CO RADM N.V. COOLEY, MC, USN<br>DCS CAPT D.B. LESTAGE, MC, USN<br>DAS CAPT R.E. ERWIN, MSC, USN<br>DNS CAPT M.J. NIELUBOWICZ, NC, USN |
| NSHA DET, PORTSMOUTH, VA ..... | OIC CAPT D. CRAIG, MSC, USN<br>AO LCDR G. MURPHREE, MSC, USN |
| NAVREGMEDCLINIC, QUANTICO, VA .... | CO CDR R.A. PAYTON, MSC, USN<br>DAS LCDR J.R. HELTSLEY, MSC, USN<br>DNS CAPT M. SWETONIC, NC, USN |
| NAVHOSP, ROOSEVELT RDS, PR ..... | CO CAPT P.F. WELLS II, MC, USN<br>DAS CDR G.N. STEWART, MSC, USN<br>DNS CAPT C. CLUNAN, NC, USN |
| NAVREGDENCEN, ROOSEVELT RDS, PR .. | CO CAPT M.S. DAVIS, DC, USN<br>DCS CAPT T.L. HURST, DC, USN<br>DAS LT S.E. GARNTO, MSC, USN |



FOLD

| | |
|---|---|
| NAVREGMEDCEN, CAMP PENDLETON, CA . | CO CAPT L.U. PULICICCHIO, MC, USN<br>DCS CAPT L.E. NELSON, MC, USN<br>DAS CDR E.L. WILSON, MSC, USN<br>DNS CAPT J. BROUILLETTE, NC, USN |
| NAVREGDENCEN, CAMP PENDLETON, CA . | CO CAPT R.M. ROMANIELLO, DC, USN<br>DCS CAPT P.J. REISMAN, DC, USN<br>DAS CDR L.E. BELTER, MSC, USN |
| NAVREGMEDCEN, CHARLESTON, SC .... | CO CAPT J.S. CASSELLS, MC, USN<br>DCS CAPT L.C. HODGES, MC, USN<br>DAS LCDR M.J. BENSON, MSC, USN<br>DNS CAPT M. YOUNG, NC, USN |
| NAVREGDENCEN, CHARLESTON, SC ..... | CO CAPT R.W. KOCH, DC, USN<br>DCS CAPT F.H. KELLNER, DC, USN<br>DAS LT D.A. HARGETT, MSC, USN |
| NAVHOSP, CHERRY POINT, NC ..... | CO CAPT J.R. ERIE, MSC, USN<br>DAS CDR P. HAWS, MSC, USN<br>DNS CAPT H. HOLBROOK, NC, USN |
| NAVREGMEDCEN, CORPUS CHRISTI, TX .. | CO CAPT R.R. PALUMBO, MC, USN<br>DCS CAPT B.J. BLANKENSHIP, MC, USN<br>DAS CDR C.A. ARMSTRONG, MSC, USN<br>DNS CAPT K. JONES, NC, USN |
| NAVREGMEDCEN, GREAT LAKES, IL ..... | CO CAPT R.J. SEELEY, MC, USN<br>DCS CAPT A.M. MARTINSON, MC, USN<br>DAS CDR J.W. BALDWIN, MSC, USN<br>DNS CAPT J. BARNES, NC, USN |
| NAVREGDENCEN, GREAT LAKES, IL ..... | CO CAPT R.G. SHAFFER, DC, USN<br>DCS CAPT R.A. ESPOSITO, DC, USN<br>DAS LCDR L.T. FOSKEY, MSC, USN |
| NAVDENTALRSCHINSTITUTE, GREAT LAKES, IL ..... | CO CAPT D.W. TURNER, DC, USN |
| NAVHOSPCORPSCOL, GREAT LAKES, IL .. | CO CDR C.H. HAYES, MSC, USN<br>XO VACANT<br>SR NURSE CAPT C. KOZARE, NC, USN |
| US NAVREGMEDCEN, GUAM MI ..... | CO CAPT C.W. BRAMLETT, MC, USN<br>DCS CAPT T.A. OSTER, MC, USNR<br>DAS LCDR R.R. WELCH, MSC, USN<br>DNS CAPT D. BECKTELL, NC, USN |
| NAVREGDENCEN, GUAM MI ..... | CO CAPT R.L. SKYBERG, DC, USN<br>DCS CAPT G.L. PAULK, DC, USN<br>DAS LCDR E. HANSON, MSC, USN |
| NAVHOSP, GUANTANAMO BAY, CUBA ... | CO CAPT C.F. MAAS, MC, USN<br>DAS LCDR C.J. PARKER, MSC, USN<br>DNS CAPT J. PORTER, NC, USN |

| | |
|---|---|
| NAVREGMEDCEN, JACKSONVILLE, FL ... | CO CAPT J.J. QUINN, MC, USN<br>DCS CAPT C.K. WALLACE, MC, USN<br>DAS CAPT R.L. WENTWORTH, MSC, USN<br>DNS CAPT A. FOLEY, NC, USN |
| NAVREGDENCEN, JACKSONVILLE, FL ... | CO CAPT A. HERR, DC, USN<br>DCS CAPT O.B. WALKER, DC, USN<br>DAS LT P. BOVASSO, MSC, USN |
| NAVDISVECTECOLCONCEN, JACKSONVILLE, FL ..... | OIC CDR J.M. LAMDIN, MSC, USN<br>AO LCDR B.R. FORO, MSC, USN |
| NAVREGMEDCLINIC, KEY WEST, FL .... | CO CDR N.E. DENISON, MSC, USN<br>DNS CAPT G. SPELLMAN, NC, USN |
| NAVHOSP, LEMOORE, CA ..... | CO CAPT T.F. LEVANDOWSKI, MSC, USN<br>DCS CAPT W.M. HINZ, MC, USN<br>DAS LCDR J. BARTLETT, MSC, USN<br>DNS CAPT N. MACDOWELL, NC, USN |
| NAVREGMEDCEN, LONG BEACH, CA .... | CO CAPT L.H. ESKE, MC, USN<br>DCS CAPT R.H. RAHE, MC, USN<br>DAS CDR K.L. LASHLEY, MSC, USN<br>DNS CAPT M. DONOGHUE, NC, USN |
| NAVREGDENCEN, LONG BEACH, CA ..... | CO CAPT S.E. PEPEK, DC, USN<br>DCS CAPT W.C. SULLIVAN, DC, USN<br>DAS LT B. MCINDOE, MSC, USN |
| US NAVMEDRSCHU #2, MANILA, RP ..... | CO CDR W. SCHROEDER, MSC, USN |
| NAVREGMEDCEN, MEMPHIS, TN ..... | CO CAPT O.B. EMERINE, MC, USN<br>DAS CDR R.M. COAN, MSC, USN<br>DNS CAPT F. FRAZIER, NC, USN |
| US NAVREGMEDCEN, NAPLES, IT ..... | CO CAPT R.M. O'BRIEN, MC, USN<br>DCS CAPT D.R. DAVIS, MC, USN<br>DAS CDR D. BENANDER, MSC, USN<br>DNS CAPT M. BIRKHIMER, NC, USN |
| US NAVREGDENCEN, NAPLES, IT ..... | CO CAPT W.S. SCOTT, DC, USN<br>DCS CAPT M.S. BURCH, DC, USN<br>DAS CDR J. BOYLE, MSC, USN |
| US NAVENPVNTMEDU #7, NAPLES, IT .... | ICO CAPT J.J. BELLANCA, MC, USN<br>AO LCDR D.E. ANDERSON, MSC, USN |
| NAVSUBMEDCEN, NEW LONDON, CT .... | CO CAPT J.K. SUMMITT, MC, USN<br>DCS CAPT R.B. JOHNSON, MC, USN<br>DAS CDR M.S. DUNY, MSC, USN<br>DNS CAPT N. LUNDQUIST, NC, USN |
| NAVSUBMEDRSCHLAB, NEW LONDON, CT . | CAPT W.C. MILROY, MC, USN |
| NAVBIODYNLAB, NEW ORLEANS, LA .... | OIC CAPT J.E. WENGER, MC, USN |
| NAVREGMEDCLINIC, NEW ORLEANS, LA .. | CO CDR K. SNOW, MSC, USN<br>SR NURSE LCDR R. TAYLOR, NC, USN |



| | |
|---|---|
| NAVREGMEDCEN, NEWPORT, RI ..... | CO CAPT N.R. RAFFAELLY, MC, USN<br>DCS CAPT R.T. LARSEN, MC, USN<br>DAS CDR N.K. OWENS, MSC, USN<br>DNS CAPT M. HALL, NC, USN |
| NAVREGDENCEN, NEWPORT, RI ..... | CO CAPT C.A. BROWN, DC, USN<br>DCS CAPT R.B. ANNIS, DC, USN<br>DAS LT J.C. WANAMAKER, MSC, USN |
| NAVAL BASE, NORFOLK, VA ..... | RADM J.B. HOLMES, DC, USN (ADDU) |
| NAVREGDENCEN, NORFOLK, VA ..... | CO RADM J.B. HOLMES, DC, USN<br>DCS CAPT J.S. KITZMILLER, JR., DC, USN<br>DAS CDR C.A. WESOLOWSKI, MSC, USN |
| NAVENPVNTMEDU #2, NORFOLK, VA .... | OIC CAPT H.J. CANDELA, MC, USN<br>AO LT H.T. BROWN, MSC, USN |
| NAVENVIRHLTHCEN, NORFOLK, VA .... | CO CAPT R.A. NELSON, MC, USN<br>XO CDR J.P. SMITH, JR., MSC, USN |
| NAVREGMEDCEN, OAKLAND, CA ..... | CO RADM W.M. LONERGAN, MC, USN<br>DCS CAPT J.P. SMYTH, MC, USN<br>DAS CDR F.D.R. FISHER, MSC, USN<br>DNS CAPT J. EMAL, NC, USN |
| NAVBIOSCILAB, OAKLAND, CA ..... | CO CDR A. COBET, MSC, USN<br>AO LT F.R. WHITE, MSC, USNR |
| US NAVREGMEDCEN, OKINAWA, JA .... | CO CAPT G.E. GRIFFIN III, MC, USN<br>DCS CAPT G.R. LOONEY, MC, USN<br>DAS CDR J.L. SMITH, MSC, USN<br>DNS CAPT N. BLANK, NC, USN |
| US NAVREGDENCEN, OKINAWA, JA ..... | CO CAPT E.H. PLUMP, DC, USN<br>DCS CAPT W.H. SNELL, JR., DC, USN<br>DAS LCDR J.P. WILLEMS, MSC, USN |
| NAVREGMEDCEN, ORLANDO, FL ..... | CO CAPT L.R. FOUT, MC, USN<br>DCS CAPT W.A. SCHEFSTAD, MC, USN<br>DAS CDR C.R. LOAR, MSC, USN<br>DNS CAPT L. NICKERSON, NC, USN |
| NAVREGDENCEN, ORLANDO, FL ..... | CO CAPT P.S. COMBS, DC, USN<br>DCS CAPT J.E. KLIMA, DC, USN<br>DAS CDR R. REYSEN, MSC, USN |
| NAVREGDENCEN, PARRIS ISLAND, SC ... | CO CAPT R.D. ULREY, DC, USN<br>DCS CAPT J.C. KEHOE, DC, USN<br>DAS CAPT P.T. RAY, MSC, USN |
| NAVHOSP, PATUXENT RIVER, MD ..... | CO CAPT J. GRAVES, MSC, USN<br>DCS CAPT J.P. SENN, MC, USN<br>DAS LCDR W. BUCKLEY, MSC, USN<br>DNS CAPT H. BRASHEAR, NC, USN |
| NAVREGMEDCLINIC, PEARL HARBOR, HI .. | CO CAPT D.E. SHULER, MSC, USN<br>XO CDR R. BRANT, MSC, USN<br>DNS CAPT N. STEWART, NC, USN |

# Surgeon General Scouts the Jamboree

*VADM Cox is introduced to the scout custom of patch-swapping.*

With over 30,000 Boy Scouts simultaneously "doing their thing," a casual observer or even a full-time participant might well have overlooked two Navy physicians and several Navy corpsmen working hard to keep the boys healthy.

The doctors, RADM David Carmichael, MC, USNR (Ret.), and CAPT Khlar McDonald, MC, USNR, were part of a medical team comprising some 350 doctors, nurses, medical technicians, and support staff recruited for the 1981 National Scout Jamboree. The event was held at the 75,000-acre Fort A.P. Hill near Fredricksburg, VA, 29 July—4 Aug 1981.

Handling the medical needs of what amounted to a medium-sized city was no small task, and to do it effectively, two Jamboree health centers staffed by 10 physicians, 6 registered nurses, and 2 emergency medical technicians operated 24 hours a day. Each of the Jamboree subcamps also had its own health center manned around the clock by four physicians. An Army Mobile Unit Surgical Transportable (MUST) unit was available for those patients requiring hospital treatment as were ambulances and helicopters for emergency evacuation to other medical facilities.

By the time the scouts broke camp, almost 11,000 patients had been treated for everything from cuts and insect bites to broken limbs. The only major crisis the Jamboree organizers faced had nothing to do with health care at all. What do you do with 30,000 hungry scouts stranded by an air traffic controller's strike? —JKH

*One of the Jamboree's "health centers"*

# Diagnosis and Treatment of Recurrent Aphthous Stomatitis

CDR M.T. Tyler, DC, USN
CDR G.T. Terezhalmy, DC, USN

Recurrent aphthous stomatitis is one of the most common oral ulcerative lesions. Pleomorphic alpha-hemolytic streptococcus, *Streptococcus sanguis,* has been isolated from early lesions, demonstrated in histological sections, and when inoculated into laboratory animals, has produced lesions consistent with aphthous stomatitis. Cell-mediated immunity may also be an important vector because lymphocytes from patients with recurrent aphthous stomatitis are cytotoxic to mucosal epithelium.

**Diagnosis**

There are three distinct entities of recurrent aphthous ulcerations. The ulcerations typically are confined to the nonkeratinized oral mucosa. Exacerbations may be frequent and they are associated with certain predisposing factors, including heredity, emotional and physiological factors, trauma, certain types of food, and drug allergies.

*Minor aphthae,* by far the most common type, are characterized by recurrent crops of ulcers less than one cm in diameter. Prodromata associated with localized altered sensation is followed by the appearance of erythematous papules. Consequently, a painful erosion with a grayish-yellow pseudomembranous crater is accentuated by an erythematous halo (Figure 1). The patients are afebrile but may present with discrete submandibular lymphadenopathy. Complete resolution without scarring may take 7-14 days.

*Major aphthae* are chronic, solitary ulcers greater than one cm in diameter. Prodromal nodules enlarge to destructive craterlike lesions with an indurated, raised border (Figure 2). Persistent necrosis suggests vascular damage and infiltration of microorganisms into the underlying connective tissue. Associated signs and symptoms include severe pain and submandibular and cervical lymphadenopathy. Complete resolution with extensive scarring may take weeks or even months.

Both minor and major aphthae may be accompanied by ulcers of the genital mucosa and the eyes that are suggestive of Behcet's syndrome. Ulceration of the soft palate and fauces is an ominous sign. In many cases multisystemic involvement may include arthritis, skin lesions, thrombophlebitis, arteritis, and neuropathy.

*Herpetiform ulceration,* a less common type of recurrent problem, is characterized by shallow, pinpoint ulcers not necessarily confined to the nonkeratinized tissues of the oral cavity. There may be 20 or more ulcers at a time superficially resembling but unrelated to herpetic infections (Figure 3).

*FIGURE 1. Minor aphthae*

Dr. Tyler is on the staff of the Oral Diagnosis Department, National Naval Dental Center, Bethesda, MD 20814. Dr. Terezhalmy is Chairman of the department.

*FIGURE 2. Major aphthae*

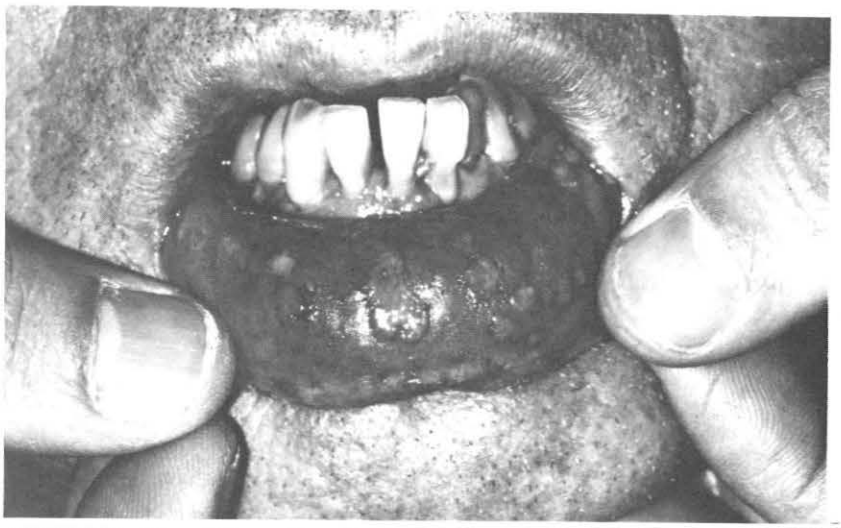


*FIGURE 3. Herpetiform ulcerations*

**Treatment**

It has been suggested that 80-90 percent of the treatment for recurrent aphthous stomatitis is less than effective. Therefore, palliative and supportive care should be directed to the control of precipitating factors. These vary from patient to patient, but self-induced trauma is by far the most common vector. Foods to avoid during an episode of exacerbation include citrus fruits, melons, vinegar, spices, chocolate, walnuts, sour substances, and tomatoes.

*Topical corticosteroids* are the most common form of treatment for minor aphthae. (*1,2*) In instances of solitary lesions, hydrocortisone should be tried first; 0.5 percent preparations are available without prescription. (*3*) More serious lesions may respond better to a fluoridated steroid preparation; (*4*) preparations with a 0.1 percent concentration may be used interchangeably because they all appear to be approximately equipotent. (*2,5,6*) Empirical data suggest that some patients may respond better to one topical agent than another. Corticosteroids may reduce local epithelial cell damage and the release of antigens, minimize the activity of sensitized lymphocytes, and alter cell membrane permeability to toxic microbial byproducts. (*6-8*) Treatment is most effective when initiated in the prodromal period. (*9*) The treatment decreases the symptoms and the time of resolution, but it has no effect on the rate of recurrence. (*1,2*) Adverse reactions are seldom a serious consideration with these agents as long as the diagnosis is accurate. (*1,9,10*)

**Rx**
Hydrocortisone ointment, 0.5 percent
Disp: 5 gm tube
Sig: Apply to oral lesions after each meal and at bedtime

**Rx**
Triamcinolone acetonide ointment, 0.1 percent
Disp: 5 gm tube
Sig: Apply to oral lesions after each meal and at bedtime

**Rx**
Betamethasone valerate ointment, 0.1 percent
Disp: 5 gm tube
Sig: Apply to oral lesions after each meal and at bedtime

*Systemic corticosteroid therapy* may be instituted in cases of severe aphthae or when large painful lesions are not readily accessible for topical application. Marked improvement has been noted with 40 mg of prednisone or prednisolone administered daily for four days and then decreased by 10 mg for each of the next three days. (*9*)

**Rx**
Prednisone, 10 mg
Disp: 22 tablets
Sig: Take four tablets once a day for four days; then decrease by one tablet for each of the next three days

**Rx**
Dexamethasone, 0.5 mg/5 ml
Disp: 100 ml bottle
Sig: Rinse with one teaspoonful four times a day for two minutes and swallow

*Antibiotics* have been shown to reduce the symptoms and duration of aphthae without affecting the rate of recurrence. (*11*) Rinses, compresses, and systemic tetracycline have been widely used. (*8,12-14*) It is postulated that favorable clinical response may be due to a bacteriostatic effect on a single pathogen or the control of secondary infection by the broad spectrum tetracycline.

**Rx**
Tetracycline, 250 mg
Disp: 40 tablets
Sig: Take two tablets four times a day for two days; then one tablet four times a day for three days

or

Sig: Four times a day, dissolve one tablet in a teaspoonful of water and rinse with the suspension three to five minutes and swallow

or

Sig: Four times a day, dissolve one tablet in a tablespoonful of water, saturate a 2 x 2 inch gauze and apply topically as a compress for three to five minutes

*Iron, folic acid, and* $B_{12}$ deficiencies have been implicated as possible contributing or precipitating factors at least in some patients with recurrent aphthae. (*15-17*) In instances of an established deficiency state, favorable response to replacement therapy has been noted. This treatment modality requires a cooperative effort between the dentist and the physician.

*Levamisole,* a veterinary antihelmintic, has been widely investigated as a potential agent for the treatment of aphthae. It is believed to stimulate phagocytosis (*18*) and modulate the immune response (*19*) by correcting a deficiency of suppressor lymphocytes or potentiating the cellular response, (*20,21*) thereby affecting delayed hypersensitivity reactions. (*7,21,22*) Data on the efficacy of levamisole in the treatment of aphthous stomatitis are equivocal at present. Reports are contradictory relative to dosage, regimen, modulation of pain, healing, and frequency of recurrence; (*23-27*) however, adverse reactions are minimal. (*24,27*)

*Over-the-counter products* are also available to the patients for treating aphthae. These products are intended only for the temporary relief of pain, (*28*) and they are included here primarily for the purpose of completeness. Typical agents in these products include tannic acid (an astringent), benzoin (a demulcent), camphor and menthol (counterirritants), benzocaine (a topical anesthetic), methylbenzethonium chloride and benzalkonium chloride (germicidals), and urea carbamide (debridement and cleansing). Some over-the-counter products are:

- Ambesol—Whitehall Laboratories
- Blistex Ointment—Blistex, Inc.
- Campho-Phenique—Glenbrook Laboratories
- Cold Sore Lotion—DeWitt International Corp.
- Dalidyne and Dalidyne Gel—Dalin Pharmaceuticals, Inc.
- Orabase—Hoyt Laboratories
- Orajel—Commerce Drug Company, Inc.
- Proxigel—Reed and Carnrick
- Rexall Cold Sore Lotion and Cold Sore Ointment—Rexall Drug Company
- Tanac—Commerce Drug Company, Inc.

## Conclusion

The goals of therapy for recurrent aphthous stomatitis consist of controlling pain, shortening the duration of the lesions already present, and preventing new ulcers. If the patient does not respond to conservative treatment, further diagnostic workup should extend to hematology screening, including a complete blood count; a determination of serum iron, folic acid, and $B_{12}$ levels; and appropriate medical consultation when indicated.

## References


1. Merchant HW, Gangarosa LP, Glassman AB, Sobel RE: Betamethasone-17-benzoate in the treatment of recurrent aphthous ulcers. *Oral Surg* 45:870-875, 1978.

2. Browne RM, Fox EC, Anderson RJ: Topical triamcinolone acetonide in recurrent aphthous stomatitis: A clinical trial. *Lancet* I:565-567, 1968.

3. Topical hydrocortisone without a prescription. *Med Lett Drugs Ther* 22:38-39, 1980.

4. Amcinonide (Cyclocort)—A new topical corticosteroid. *Med Lett Drugs Ther* 22:51-52, 1980.

5. McCuistion CH: A doubleblind comparison of fluocinonide and betamethasone valerate ointment. *Curr Ther Res* 15:44-47, 1973.

6. Cawson RA: Oral ulceration—Clinical aspects. *Oral Surg* 33:912-921, 1972.

7. Lehner T: Immunologic aspects of recurrent oral ulcers. *Oral Surg* 33:80-85, 1972.

8. Stanley HR: Management of patients with persistent recurrent aphthous stomatitis and Sutton's disease. *Oral Surg* 35:174-179, 1973.

9. Kay LW: Corticosteroids in diseases of the oral mucosa. *Int Dent J* 26(4):405-410, 1976.

10. Lozada F, Silverman S Jr: Topically applied fluocinonide in an adhesive base in the treatment of oral vesiculoerosive diseases. *Arch Dermatol* 116:898-901, 1980.

11. Graykowski EA, Hooks JJ: Summary of workshop on recurrent aphthous stomatitis and Behcet syndrome. *J Am Dent Assoc* 97:599-602, 1978.

12. Graykowski EA, Barile MF, Lee WB, Stanley HR: Recurrent aphthous stomatitis: Clinical, therapeutic, histopathologic, and hypersensitivity aspects. *JAMA* 196:637-644, 1966.

13. Graykowski EA, Kingman A: Double-blind trial of tetracycline in recurrent aphthous ulceration. *J Oral Path* 7:376-382, 1978.

14. Shore RN, Shelley WB: Treatment of aphthous stomatitis by suppression of intralesional streptococci. *Arch Dermatol* 109:400-406, 1974.

15. Wray D, Ferguson MM, Mason DK, Hutcheon AW, Dagg JH: Recurrent aphthae: Treatment with vitamin $B_{12}$, folic acid, and iron. *Br Med J* 2:490-493, 1975.

16. Nally FF, Blake GC: Recurrent aphthae: Treatment with vitamin $B_{12}$, folic acid, and iron. *Br Med J* 3:308, 1975.

17. Wray D, Ferguson MM, Hutcheon AW, Dagg JH: Nutritional deficiencies in recurrent aphthae. *J Oral Path* 7:418-423, 1978.

18. Allen DE, Bertram K, Pinnel SR: Levamisole and skin diseases. *Int J Dermatol* 17:287-300, 1978.

19. Husz S, Hunyadi J, Berko G, Dobozy A, Kenderessy A, Simon N: Clinical effect of levamisole therapy and its immunological control. *Dermatol Monatsschr* 165:569-574, 1979.

20. Lehner T, Wilton JMA, Ivanyi L: Double-blind crossover trial of levamisole in recurrent aphthous ulceration. *Lancet* II:926-929, 1976.

21. Lehner T: Characterization of mucosal antibodies in recurrent aphthous ulceration and Behcet's syndrome. *Arch Oral Biol* 14:843-853, 1969.

22. Sampson D: Studies on levamisole: A potentially useful drug in the treatment of Behcet's syndrome. *J Oral Path* 7:383-386, 1978.

23. Drinnhan AJ, Fischman SL: Randomized, double-blind study of levamisole in recurrent aphthous stomatitis. *J Oral Path* 7:414-417, 1978.

24. Van De Heyning J: Levamisole in the treatment of recurrent aphthous stomatitis. *Laryngoscope* 88:522-526, 1978.

25. De Cree J, Verhaegen H, De Cock W: A randomized double-blind trial of levamisole in the therapy of recurrent aphthous stomatitis. *Oral Surg* 45:378-384, 1978.

26. Olson JA, Nelms C, Silverman S, Spitler LE: Levamisole: A new treatment for recurrent aphthous stomatitis. *Oral Surg* 41:588-600, 1976.

27. Symoens J, Brugmans J: Treatment of aphthous stomatitis and herpes with levamisole. *Br Med J* 4:592, 1974.

28. Popovich NG, Popovich JG: What you should know about fever blisters and canker sores. *US Pharmacist* 3:36-48, 1978. □

# Laminate Veneers: An Option to Consider

CAPT Ronald K. Harris, DC, USN

Discolored, misshapen, or malposed teeth have long been a problem for a large segment of the population. There are various causes of discoloration, including heavy doses of medications (tetracyclines) administered during calcification of teeth, which can produce colors in a range varying from shades of orange to violet to nearly black; (*1*) the breakdown of blood elements after trauma to teeth, filling the dentinal tubules with dark particles; (*2*) and the use of certain sealers in conjunction with root canal therapy, especially when the sealers extend too far coronally. (*3*) Enamel hypoplasia occurs in varying degrees, resulting in mottled, pitted, stained, unsightly enamel surfaces. Peg-shaped lateral incisors are a common anomally, as are tipped incisors and teeth with obvious diastemas. (*4*) Any of these conditions can be the cause of a psychological problem.

## Background

In the past, there have been few treatment modalities for making unsightly teeth esthetically acceptable. The well-meaning practitioner has offered such irreversible procedures as complete coverage restorations or even extraction and replacement with fixed or removable partial dentures. Different methods of vital bleaching have been used, with varying degrees of success. (*5,6*) The use of acid-etch techniques and improvements in the properties of resins have led to the development of a more conservative approach toward correcting unsightly teeth. By etching and overlaying the face of a tooth (usually a maxillary anterior) with a resin, a reasonably esthetic result was obtained. Problems existed in longevity, however, as the unfilled resins, though smooth when placed and finished, soon wore away, often at an uneven rate. When composite resins were used, the surfaces, although more resistant to abrasion, soon became rough and pitted and were readily stained. Some clinicians suggested grinding a processed denture tooth fairly thin and luting it to the natural tooth with a resin. However, grinding the denture teeth so that they were both thin enough and uniform enough to be useful was difficult and unpredictable. It was also found that some acrylic teeth did not bond adequately with the resins employed.

Recently, several manufacturers have marketed thin processed resin facings, to be bonded to the natural tooth with an acid-etch technique, employing an intermediate resin system. Probably the most popular of these at present is a laminated veneer set.* It includes nine molds for each of the six maxillary anterior teeth and several shades of composite resins. The kit is packaged in two styles, one with a self-curing and one with an ultraviolet light-activated resin system. The purpose of this article is to discuss the technique for applying laminate veneers and to evaluate their use in covering unsightly teeth.

## Technique

After the length and width of the tooth to be treated are measured, a laminate is selected from the nine available molds. The laminate is then modified and tapered to shape with stones of various abrasive qualities to correlate with the margin of the free gingiva; manufacturers suggest that the operator should attempt to position the laminate just slightly under the edge of the tissue. (This can be done at the chair but is conveniently accomplished on a stone model by trimming away one mm of the "free gingiva" and fitting the laminate to this new margin). In the experience of this author, gingival margins seem to be best when just flush with, or very slightly under, the margin of the tissues. A closer adaptation can be achieved with a laboratory heat treatment method suggested by the manufacturer. After trimming and

Dr. Harris is Chairman of the Operative Dentistry Department, National Naval Dental Center, Bethesda, MD 20814.

*Mastique Laminate Veneer System, L.D. Caulk Co., Milford, DE 19963

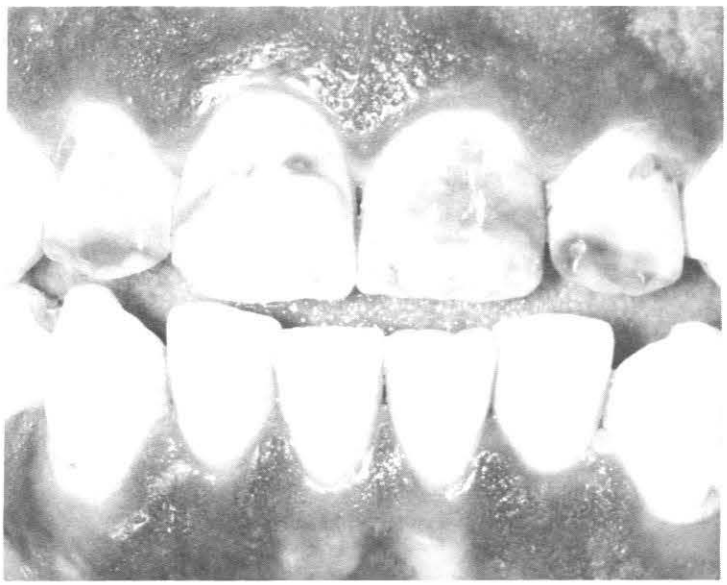


*FIGURE 1*

*FIGURE 2*

shaping, the laminates are approximated firmly to the stone model, held in place with rubber bands, and placed in an oven.

After the laminate is modified and fitted, its inner surface is cleansed with the cleaner provided, dried, and coated with the provided primer solution. The key to a bond between laminate and resin seems to be allowing the laminate to sit undisturbed for 10 minutes after the primer is applied. The surface of the tooth is pumiced clean to remove any organic debris, etched for one minute with the acid solution provided (or similar substitute), washed thoroughly, and dried. Fluorosis cases may require a longer period of etching. Isolation with cotton rolls may be preferable to using the rubber dam with this technique because it is difficult to estimate the proper gingival extension when the dam is retracted. It is a good practice to place matrix strips between teeth to prevent unwanted etching of neighboring teeth and, what is more critical, formation of bridges when the resin is applied.

The tooth is coated with an unfilled resin as an intermediate bonding agent and the appropriate shade of composite resin paste is applied to the internal surface of the laminate, which is then positioned on the tooth. An incisal toner paste is also available for better shading and esthetics. An opaquer is included in the bonding agent with the U-V activated kit to mask heavy or deep stains. With the auto-curing method, an opaque paste is provided for this purpose. After the curing of the resin, the margins are finished to feather edges to avoid areas that will attract plaque. This is best accomplished with 12-

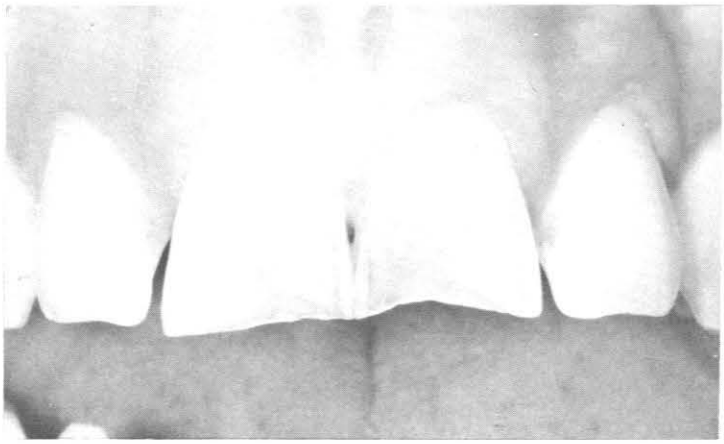


*FIGURE 3*

*FIGURE 4*

fluted finishing burs, discs, and finishing strips. Finishing the margins may be the most important aspect of this technique to insure longevity and allow for proper maintenance of hygiene. After finishing, a more complete seal can be achieved by re-etching and applying a coat of the intermediate bonding agent to the margins.

Figures 1-4 illustrate two cases in which this procedure has been used.

## Discussion

Results of the laminated veneer treatment vary, depending on several factors. If the patient does not maintain excellent plaque control, any areas contributing to additional accumulation of material will do more harm. Teeth that are extremely crowded or overlapped may preclude proper positioning of the laminates and make finishing difficult. The treatment may be contraindicated in patients with a high incidence of caries, especially caries involving interproximal surfaces of the anterior teeth. If the procedure is used, the caries should be treated first. Because the composite resins pick up the shade of underlying structures, the system works best on teeth without exceptional discoloration. Very dark teeth need to be masked first with an opaque medium, which can create a chalky, unnatural appearance. This is probably less appealing to the operator than it is to the patient. Most patients who have dark teeth are enthusiastic about the change, having often been told that "nothing could be done about the problem."

Some of the more rewarding cases involve teeth with a "normal" underlying color and shade, such as peg-shaped lateral incisors and teeth with enamel hypoplastic defects, some fluorosis cases, fractures, and diastemas.

Patients must be instructed about several things. There is an immediate feeling of extra bulk on the surface, which makes the patient feel "buck-toothed" (this is usually not so noticeable after a day or two). In cases involving endogenous or tetracycline stains, the contrast against the patient's natural teeth is quite marked, and this requires a period of adjustment. At later treatment appointments, the patient should inform hygienists or other dentists that the veneer has been applied, to avoid problems such as inadvertent removal by scaling.

Unfortunately, it is not possible to predict how long the restorations will last because this method of treatment is a relatively new concept. With normal care and proper case selection, there is no reason that the acrylic laminates should not last for a number of years. At least, the system provides a worthwhile interim treatment that can be reversed if the need or desire arises. The surfaces can be scribed with high-speed finishing burs, with some effort the material can be broken free, and the tooth surface can be smoothed with abrasive discs of decreasing grit. In applying the laminates, some operators reduce the facial enamel to partial thickness to allow for a greater bulk of the resin under the laminate. This method may have some advantages, but creates an irreversible situation.

This author has treated over 30 patients and results have been positive at six-month recalls. There have been three known instances of failure: one laminate chipped at the incisal edge, possibly because the operator may have allowed overextension incisally; one patient let friends influence her opinion on the results of the treatment and elected to return to her original, tetracycline-stained condition. (The laminates were removed completely at a subsequent sitting); and one laminate apparently leaked at the margin, creating a space under the incisal one-third of the crown. Heat adaptation may have lessened the possibility of this happening.

## Conclusion

The technique is demanding and time-consuming if optimum results are to be achieved, but with careful attention to detail it can be mastered by the average practitioner. Much of the preparation can be done by trained ancillary personnel. The procedure can be considered a viable alternative to more radical and costly measures and it provides a period during which the patient can consider other options for a change in appearance.

## References


1. McDonald RE: *Dentistry for the Child and Adolescent,* ed 2. St. Louis, CV Mosby Co, 1974, p 65.

2. Grossman LI: *Endodontic Practice,* ed 8. Philadelphia, Lea & Febiger, 1974, p 337.

3. Sommer RF, Ostrander FD, Crowley MC: *Clinical Endodontics: A Manual of Scientific Endodontics,* ed 3. Philadelphia, WB Saunders Co, 1966, p 490.

4. Goldstein RE: *Esthetics in Dentistry.* Philadelphia, JB Lippincott Co, 1976, pp 25, 254, 325.

5. Arens DE, Rich JJ, Healey HJ: A practical method of bleaching tetracycline-stained teeth. *Oral Surg* 34:812-817, November 1972.

6. Bicoll N, Stevenson B Jr: Removal of chronic endemic dental fluorosis discoloration. *J Acad Gen Dent* 22:24-26, July-August 1974. □

# Colles Fractures: A Treatment Method Revisited

LT John E. Tetzlaff, MC, USNR
Joseph Strong, M.D.

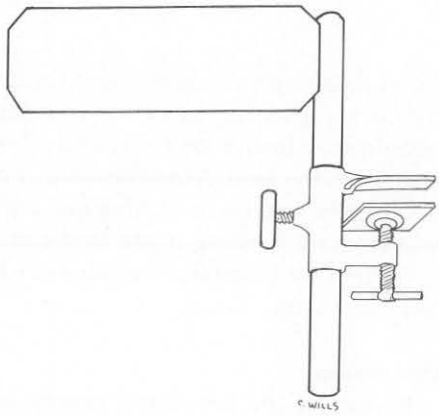


*FIGURE 1*

Colles fracture is one of the most common orthopedic injuries requiring manipulation by physicians providing primary trauma care. The severely comminuted intra-articular Colles fracture presents the classic triad of radial shortening with dorsal and radial tilt. Accurate anatomic restoration of these deformities is the objective of treatment. The methods are numerous and controversial. With inadequate closed reduction, initial deformity is often accepted. With circular casting, when the swelling diminishes, the immobilization is less than skin-tight and the reduction can slip. Recognizing the difficulties with closed reduction and simple immobilization, numerous other methods have been proposed.

Rush in 1949 advocated open reduction with the Rush rod for severely comminuted cases. (*1*) This method has largely been abandoned due to the high complication rate.

Cooney, Linscheid, and Dobyns at Mayo have advocated external fixation using a Roger Anderson device in unstable Colles fractures and report excellent results in 85 percent of their cases. (*2*) However, they also had a 27 percent serious complication rate. Significant technical and logistical skill is required to utilize this treatment method. Green proposes a pin-in-plaster method with distal pin in second or third metacarpal and proximal-ulnar pin incorporated in plaster. (*3*) He reports complications in 20 out of 45 cases. (*4*) DePalma also utilizes a pins-in-plaster method which he employs with an apparatus designed to facilitate his method. The technical difficulty and complication rate are similar to that of Green. Sarmiento has designed a functional cast brace to be applied secondarily after the initial reduction and cast immobilization. (*5*) The design demands are exacting for optimum function. Also, this not a primary treatment.

A simple, gentle traction, manipulation, immobilization method employing dorsal splint immobilization has been used in 50-75 Colles fractures per year for greater than 20 years with consistantly good results at Elyria Memorial Hospital. (*6*) Importantly, it can be implemented easily by a single physician without assistance and still achieve optimum conditions for reduction and immobilization.

**Method**

Patient longitudinal traction and gentle manipulation are accomplished optimally with general or regional anesthesia. However, satisfactory conditions can be obtained with infiltration of the fracture site with 2 percent Lidocaine 10 minutes before application of traction. If general anesthesia is employed, use of muscle relaxation facilitates manipulation. Optimum conditions are achieved with general anesthesia. (*7*)

The patient is positioned supine with the affected side shoulder at the table edge. The counter-traction plate (Figure 1) is attached to the table slightly superior to the shoulder. Once anesthesia is established, the arm is secured to the plate with 3/4-inch muslin, wrapped securely. The traction is applied via finger trap on thumb and index finger. The traction pulley (Figure 2) is positioned at knee level. The traction device (Figure 3) can be constructed from a wooden ball with two pulleys screwed into the ball at 45 degrees or a more sophisticated device can be obtained from the author. Then a rope is placed through the pulleys and eyelets to attach to the finger traps. Weight of from 10-25 lbs. is attached to the distal aspect of the traction device depending on the fracture, the extremity size, and the patience of the surgeon. The apparatus, fully assembled, is shown in Figure 4.

Following a minimum of 10 minutes of traction, the radial length loss is generally corrected. The dorsal and radial tilt can be corrected with the surgeon's thenar eminence over the distal fragment on the dorsal side with opposite hand proximal to the fracture site, volar side. If the reduction proves unstable, it can be held easily with one hand against the traction and easily reachieved if released. Medial-lateral compression will correct widening of the wrist.

Immobilization is obtained with

Dr. Tetzlaff is a resident in orthopedics at the University of Pennsylvania Hospital, Philadelphia, PA 19143. Dr. Strong practices at Elyria Memorial Hospital, Elyria, OH 44035.

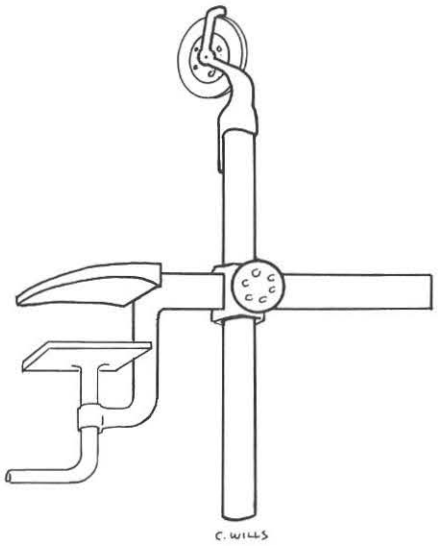



*FIGURE 2*

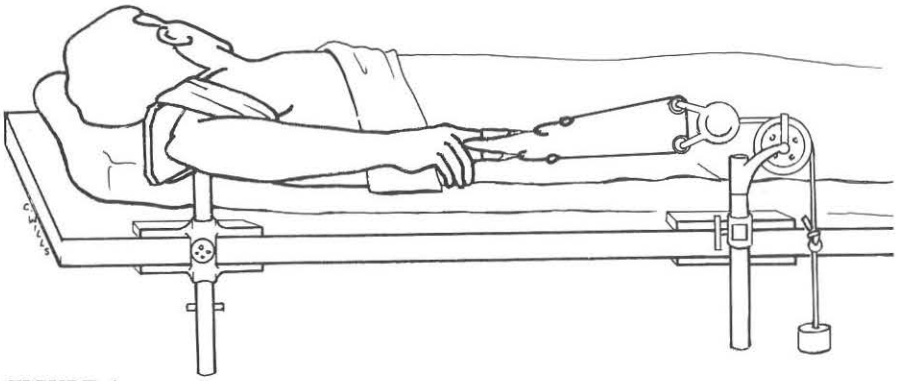


*FIGURE 4*

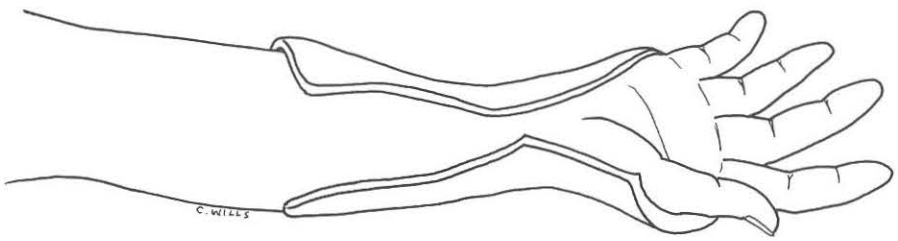



*FIGURE 5*

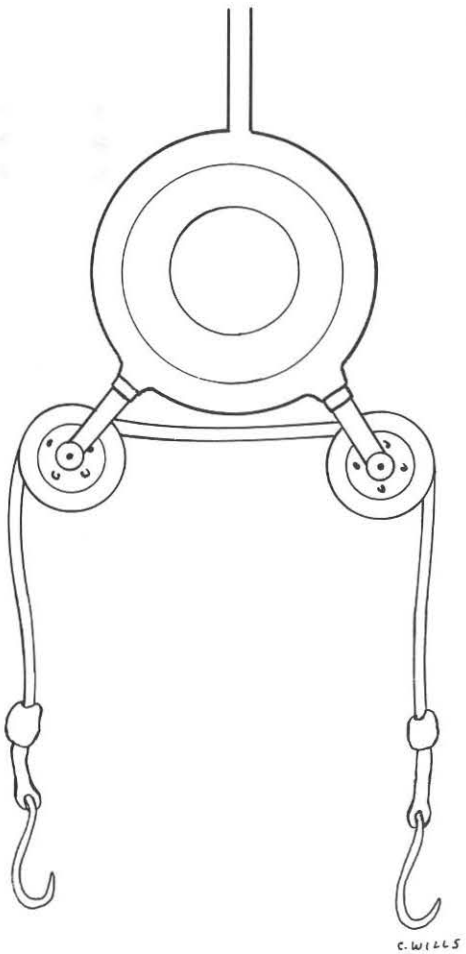



*FIGURE 3*

short-arm dorsal splint. Eight layers of eight-inch plaster are used over two layers of eight-inch sheet wadding. The plaster is wet, smoothed perfectly flat, and laid on the dorsal wrist from the lateral epicondyle to MP joints and trimmed so that it covers one-half to two-thirds of both the radius and ulna volarly (Figure 5). It is wrapped, and plaster is molded over the fracture site with surgeon's fingers and thenar eminence. Slightly lifting against traction provides the volar flexion and slight lateral deviation provides the ulnar deviation for the optimum position of immobilization. The nonmolding hand is used to smooth the plaster to the contour of the arm. After anesthesia, immediate hand motion is begun.

## Conclusions

This method of treatment for Colles fractures can be used by a single physician without assistance to obtain the optimum conditions for the reduction and immobilization of the severely comminuted, intra-articular fracture in most cases. A few instances may require surgical intervention.

In addition, this method can be modified to allow treatment of greenstick fractures of both bones of the radius, or to facilitate closed reduction of angulated forearm fractures of both bones in adults.

## References

1. Rush: *South Surgeon,* 1947.
2. Cooney, Linscheid, Dobyns: *J Bone Joint Surg* 61A:846, 1979.
3. Green: *J Bone Joint Surg* 51A:304, 1975.
4. DePalma: *J Bone Joint Surg* 34A:651, 1958.
5. Sarmiento: *J Bone Joint Surg* 57A:311, 1975.
6. Strong: *Surg Gynecol Obstet,* July 1955.
7. Cooney, Dobyns, Linscheid: *J Bone Joint Surg* 62A:613, 1980. □



☆ U.S. GOVERNMENT PRINTING OFFICE: 1981 — 361-323/108

U.S. NAVAL PUBLICATIONS and FORMS CENTER
ATTN: CODE 306
5801 Tabor Avenue
Philadelphia, Pa. 19120
Official Business

POSTAGE AND FEES PAID
DEPARTMENT OF THE NAVY
DoD-316

U.S.MAIL

CONTROLLED CIRCULATION RATE

---

Enter my subscription to U.S. NAVY MEDICINE.—$12.00 domestic mailing—$15.00 foreign mailing. (Subscription rates include postage and handling costs. Make checks payable to Superintendent of Documents.)

Send Subscription to:

NAME—FIRST, LAST

COMPANY NAME OR ADDITIONAL ADDRESS LINE

STREET ADDRESS

CITY | STATE | ZIP CODE

PLEASE PRINT

MAIL SUBSCRIPTION FORM TO:
Assistant Public Printer
(Superintendent of Documents)
Government Printing Office
Washington, DC 20402

**U.S. NAVY MEDICINE**